

THINGS

Young Men

SHOULD KNOW.

A MANUAL OF THE

Anatomy, Physiology and Hygiene of the Sexual System,

ITS DISORDERS, AND THEIR TREATMENT, MECHANICAL, MEDICINAL, AND THROUGH GENERAL PHYSICAL CULTURE.

By Charles Woodhull Caton, Ф. D.

First in the order of importance is that knowledge which is necessary for the full development of our bodies and the preservation of our health. * * Unprovided with that instinct which enables the lower animals to reject the noxious and select the nutritive, man must learn even the most primary truth that ministers to his self-preservation. If parents were themselves sufficiently educated, most of this knowledge might be acquired at the mother's knee; but by the strangest perversion and misdirection of the educational forces, these most essential elements of knowledge are more neglected than any other.—

JAMES A. GARFIELD.

It is dangerous to show man how much he resembles the beasts, without at the same time pointing out to him his own greatness. It is also dangerous to show him his greatness, without pointing out his baseness. It is more dangerous still, to leave him in ignorance of both. But it is greatly for his advantage to have both set before him.—PASCAL.

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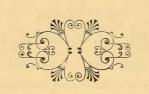
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TO MY FATHER,

Sамиец W. Сатон, D. D.,

THIS WORK IS DEDICATED

BY ONE WHO IS EVER PROUD TO WRITE HIMSELF HIS SON.



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CHAPTER 1.

INTRODUCTORY.

I want to say a few plain, kind, earnest words to the boys and young men of our beloved republic. I put them together, boys and young men. Not because I have forgotten that on the one hand boys are ambitious to be known as men, and with sensitive jealousy claim the fullest recognition of every mile-post which they have passed, and that on the other, young men are equally sensitive as to their newly earned title of man as distinguished from that of boy-not at all. But because as the years go by the young man will find that the "boy" within him is the jolliest, truest, most whole-souled part of him, and because the boy, the boy worthy of the name, possesses all the manly qualities of the man. Pope's definition, "Worth makes the man, the want of it the fellow," has been ringing down through the "corridors of time" ever since he wrote it, with that acclaim which the vox populi ever gives to truthful utterances. It is true alike of fifteen and of fifty, if we are to estimate alone by the flight of years. So I speak to the coming men of the republic, passing over the artificial distinction of years, dwelling upon a single sudject which is of interest alike to the young and the old, to all who have passed the technical childhood known to medicine, and set foot within the unknown land of puberty. To this delightsome land I trust you will find the following pages a faithful guide-book.

I do not think I am deceived in the happy confidence that I am in full sympathy with those to whom I fain would speak. I only ask to speak because of that very sympathy. For with the training and experience which a physician's daily work of

necessity brings to him, it cannot be otherwise than that much shall be learned which all boys and young men should know, and I think what the knowledge would have been worth to me in days bygone, think how it must be learned in the dread school of experience unless the fathers or the doctors volunteer the information. The first thought certainly is that the work belongs of right to the fathers, and yet not one father in a hundred gives his sons any instruction whatever on this subject, so ennobling, so all-important, so far-reaching in its relations and consequences, and in which more than any other are wrapped up the things which belong to their physical peace. The reason for this state of affairs is not hard to find. You remember in Judge Tourgee's work, "Bricks without straw," Eliab Hill, in his talk with his teacher, quotes the line from tennyson, "Tears, idle tears, I know not what they mean," and tells of his failure to intuitively grasp its meaning, thus illustrating the tremendous impetus obtained by free and intelligent races from that unseen and unrecognized force which might be termed hereditary education. But if we have inherited the culture of the ages, so slso have we had to meet and conquer slowly and with hesitancy, the prejudices of the early days which have in like manner been handed down to us. It has been a slow and tedious progression which has brought astronomy out of astrology, chemistry out of alchemy, truth out of superstition. The old idea that ignorance and inocence went hand in hand, and that ignorance could not be taught save as innocence should be distroyed has been conquered but slowly and painfully. The last stand for it has been made on the ground of the reproductive system, the position being tacitly held that young men and women never thought about such things, and to volunteer any instruction in such matters would be to wantonly destroy the perfumed innocence of childhood, as one might strike the delicate bloom from the plumb by a careless motion of the hand.

Have we not had quite enough of the "perfume" and "bloom" theories? Have they not held their fateful sway long enough, while the sons, who should have grown up as plants in their youth, and the daughters, who should have been as corner stones polished after the similitude of a palace, have had the bloom of youth fade from their cheeks and the "incensebreathing morn" of youth depart from their lives, to be succeeded by the jaundiced countenance of ill-health, and the foul breath of disease - all for the lack of a little kindly instruction? Professional and popular sentiment have joined hand in hand in this mistaken course until recent years, and, strange as it may seem, rarely is there heard within the walls of any medical school of any "pathy" a single lecture on the physiology of reproduction as applied to the practical every-day life of men and women, although the physician cannot practice a day without encountering the need for just such instruction on the part of his patients. So, with the prevailing sentiment tabooing the subject came naturally the suppression of discussion, and with the suppression of discussion came its inevitable consequence, ignorance; and ignorance instructs no man. Here, then, we have at once the double cause of the father's silence. He had the precedent of his own case. His father had said nothing to him - why should he instruct his son? And again, not having been himself instructed, he is more or less ineligible as an instructor for his son. Should the son become anxious about himself and apply to the doctor, he was but too likely to meet with the reply given by an old practitioner a few weeks ago, to a young man who consulted him. "Oh, yes," said he, "most young men get scared about themselves;" and dismissed the subject. Yet he was the family physician. But this is a picture of what has been. Now a generous public welcomes heartily any information on this topic. The doctor meets the honest seeker after truth with ready sympathy and kindly counsel. Yet still the fathers do not speak, and perhaps they

may be right. For often the silent, printed page can speak more eloquently, more pointedly than word of mouth. For if nearest friends do speak to us of these things, the unconfessed fear that they may essay to enter the holy of holies within us, which admits no high priest save ourselves only, may put us in an attitude not quite receptive and unconstrained; while the printing press delivers its message with no prying glance into the expressive face, nor sinister questioning of the thoughts of the heart. As, then, the fathers have by their silence asked us to speak, is it asking too great a favor that you sit down alone with these pages as you would with your own trusted family physician, that we may learn together with reverent mind that which it is most important for us to know?

Let it be insisted upon that we bring to our study the reverent mind. I have sometimes thought that the greatest weakness of our day is irreverence. If we but stop to think we are at once assured that our strong men, men of note in science, in letters, in everything, are reverent men. Mr. Ingersoll is often spoken of as the type of the irreverence of our age, and yet in his best moments he is most reverent. Listen while he speaks "Life is a narrow vale from the side of his dead brother: between the cold and barren peaks of two eternities. We strive in vain to look beyond the heights. We cry aloud, and the only answer is the echo of our wailing cry. From the voiceless lips of the unreplying dead there comes no word; but in the night of death hope sees a star and listening love can hear the rustle of a wing." Surely these are reverent words; more than this, they are strong words. We are so often compelled to listen to the jeering and irreverent word, omnipresent in the shop, the store, the office, the hotel, and on the railway train. ruthlessly profaning the most sacred things of life as though it were evidence of strength of mind so to do, that we must needs ever remind ourselves that the vulgar is weak and the pure strong. For every unseemly joke and shameless story to

which we must perforce lend an unwilling ear, carries with it the implied lie that it is the badge of an independent mind to laugh at and make sport of the most hallowed of life's possessions. Whereas, the false and vile is pitiably weak, while 'Truth is mighty and will prevail.'

Historians tell us that it was this same pitiful weakness of false life which worked the inevitable decline and fall of the Roman Empire. Corrupting first the family and society, the hideous corrosion ate its way remorselessly into the very unit and foundation of government, until Rome fell to pieces from its own rotten weight. I have said that I desired greatly to speak to the young men of our Republic, of our beloved country. No itching for a well-rounded and resounding sentence dictated that phrase. None but the physicians of the land can ever know how well-nigh universally its boys and young men have wandered into by and forbidden paths, and if all-powerful Rome succumbed to social rottenness, what is to become of our own great Republic under like conditions? Some six years ago, when financial heresies were most rampant, our lamented President Garfield wrote a ringing article for the New York Independent, his opening sentence being this: "Never to despair of the Republic' is the first lesson of patriotism and the highest duty of the citizen." That is it exactly. spoke in full view of the dangers which threatened our national credit; we speak in full view of the dangers which threaten that unit of government, the family. And shall we not take up his own sturdy battle cry of freedom and wake the echoes again and again with the shout of "Never despair of the Republic" as we face this other danger; remembering that much of this transgression has been done "ignorantly in unbelief," and that with reverent enlightenment it shall be ours to add that other triumphant exclamation, "The truth has made us free."

Let me say farther, that that man is irretrievably lost, who has not the highest respect for the audience to whom he would

speak. The man who opens his lips to talk down to the waiting multitude has made failure most lamentable before he has uttered a word. It is a wonderful privilege which is given a man when he is permitted to speak to an expectant crowd of eager faces, who are waiting to be instructed, hungering to be fed, longing to be thrilled with the presentation of that which he has worked out for them while their time and strength have been spent faithfully in other duties, else they had been able to do better, perchance, for themselves what it is his prerogative to do for them. I have the most unbounded admiration for that august assemblage to which I would speak; which I should not attempt to address did not these my peers have a right to expect of me whatever I might be able to offer them as the fruit of special training in a single direction. For this world of ours is a great commune in the noblest sense of that rather disgraced word, and every advance of civilization but tends to perfect our true communism.

Some wise man has exclaimed, "Who can know the heart of a boy!" Ah, the heart of a boy is a most sacred thing. ambitions, its aspirations, its loves, its longings, its chivalry, its intuitive admiration for all that is noblest, truest, and best, who can fathom? Who can ever estimate how many true, boyish hearts have been thrilled beyond expression by the "pieces" in that old "McGuffey's High School Reader?" No teacher or examining committee can ever know. How well I remember my own experience. To "read in school" was a fiery trial in both the internal and external meaning of the words. mantling flush which made my very ears tingle, was ample justification of the external. We used to call it "getting hot." And the outward sign was no exaggeration of the mingled diffidence, admiration for the piece, and miserable consciousness of failure to reach my ideal rendering which burned within. boys were awkward and vandal readers enough when we read before the school, but no master of rhetoric and elocution will

ever approach the rendering which the great-hearted boys have all along been giving the selections in the old readers, in those still hours when that ruder voice which speaks to the external world was superceded by the matchless inner voice, filling with perfect cadence the marble halls of the soul's innermost temple. There has "Spartacus" had its only perfect rendition; there alone has the "Polish Boy" been adequately voiced; there, and there only, have the "Bells," silver, golden, brazen and iron, spoken with perfect tone and meaning. The world will never know what it owes to this true-heartedness which it has never guessed, and which never has and never will find outward expression. To this true-heartedness I dedicate these pages, knowing full well that I am perfectly safe in entrusting to its censorship the revealings it contains of nature's laws and nature's penalties. Those to whom sacred trusts are committed are ever ennobled by their faithful keeping, and I commit these pages to your keeping, confident that whatever new trust they may bring to you will be so faithfully kept that all shall recognize that not the ignorant, but the instructed young man is the noblest Roman of them all.

The story is told of M. Ranc, who was mayor of Paris during the tempestuous days of 1870, that one day he wished to enter the Palace of the Corps Legislatif, but was halted by the guard who told him that he could not enter without a written order from the mayor. "But I am the mayor himself," urged M. Ranc. "Can't help it," insisted the guard, "my orders are to let no one pass without a written order from the mayor." So the mayor tore a leaf from his memorandum book and wrote upon it, "Let me pass. M. Ranc, mayor;" and instantly the guard bowed him in with every token of respect. It was but a minor incident of those excited days, yet the fact thus forcibly presented that his own official character was the one power which could give him entrance to that jealously guarded chamber, is an apt illustration of that other fact that true nobility of

character can alone give us a passport to all that is true and beautiful and good in life. Friends and money and power can no more give us this passport, than they can give the blind passports to the glories of the Alps. Even so I trust that no one will pass on to the perusal of the following pages who feels that he is skulking where he has no right to be, but that all may be enabled by the supreme authority of their own sovereign nobility of character to issue the imperative command, "Let me pass."

CHAPTER II.

SAUNTERINGS IN BIOLOGY.

In the very first sentence of this chapter I warn all those who read for entertainment alone, without any mental exertion on their part being either expected or desired, to skip it entire from the first word to the last. Not that I would be understood as throwing doubt on the intrinsic interest of the topic in hand, for I know of none which possesses an interest more absorbing. But without close attention, and that mental honesty which lets no sentence and no phrase pass until thoroughly understood and comprehended, we shall gain neither knowledge nor entertainment. This may seem a needless repetition of acknowledged axiom, and yet practically a vast number of so-called readers deny its truth, for they will throw aside a volume as stupid and unworthy of them because the meaning in its lines cannot be grasped as rapidly as the eye can recognize the printed words. Others feel that nothing has been accomplished unless they have, to use their own expression, of such charmingly unconscious aptitude, "gone over" a certain number of pages. Doubtless this unfortunate method of estimating the amount of reading done by the number of pages turned, is due in part to an undisciplined zeal, which, in the desire to be wellread, attempts to read everything that anybody and everybody recommends. "It should always be borne in mind that the busiest reader must leave unread all but a mere fraction of the good books in the world. 'Be not alarmed because so many books are recommended,' says Bishop Potter; and 'do not attempt to read much or fast;' but 'dare to be ignorant of many things.' There are now 1,100,000 printed books in the library of the British Museum alone; and the library of the Bibliotheque Nationale of Paris contains more than 3,000,000 volumes. Mr. F. B. Perkins, an experienced Librarian, estimates that not less than 25,000 new books now appear annually; and yet the reading of a book a fortnight, or say twenty-five books a year, is quite as much as the average reader can possibly achieve—a rate at which only 1,250 books could be read in half a century. Since this is so, he must be very thoughtless and very timid who feels any shame in confessing that he is wholly ignorant of a great many books; and on the other hand, none but a very superficial and conceited reader will venture to express surprise at the deficiencies of others, when a little thought would make his own so clearly manifest. In Cowper's words:

'Knowledge is proud that he has learned so much; Wisdom is humble that he knows no more.'"*

The manner in which we have gone after the strange gods of growth by accretion, rather than by digestion and assimilation, is well characterized by Rev. E. E. Hale. He says: "It is largely the fault of the schoolmasters that the word 'education' has come to be considered synonymous with going to school. 'Where was he educated?' means, 'What college or school did he attend?' 'Is he an educated man?' means, 'Did he take a diploma at any college?' As long ago as Miss Edgeworth, she put in her protest against the habit which spoke of a young ladies' education as 'finished,' when the governess was dismissed. 'I hope you will say that your education has just begun,' said the virtuous governess. But, in face of Miss Edgeworth and common sense, careless conversation still permits such misuse of the word 'education.'

"What is much worse, is that an abuse of schooling has followed. Largely misled by the theory that education is ended

^{*} The Choice of Books, Richardson.

when a boy or girl leaves school, trustees and committees pile in upon the schoolwork every form of instruction. Into this little boat the school are packed, first the children, to save them; then milk and water and sugar enough to keep them alive; then knives and nails and gimlets for them to use on their desert island; then powder and dynamite, percussion-caps and bullets against their enemies; then philosophies of ethics and politics and medicine and hydrostatics and hydronamics for their safety there; then architecture, music, and all other fine arts; and, just as the poor boat is sinking, a dozen professors of languages, with their 'Ollendorffs,' are tumbled into it, for fear the babies shall not be able, after they are saved from shipwreck, to talk with the Aborigines. Boy or girl at seventeen is expected to have made a competent acquaintance with all the matters which we have thus named.

"To do this promptly enough the text-books are reduced to the humblest minimum of information. As in an Italian opera you would find the lowest reduction of the possible story of Lear, in a text-book for large circulation you would find the lowest dilution of the science involved. 'Botany in Eleven Weeks,' is the name of one such book. 'Chemistry in Eleven Weeks' is another. At this rate, between nine years of age and seventeen, a boy can 'learn' thirty-two 'sciences' at school, and need never study but one at a time; and little good would all of them together do him. This form of folly has, perhaps, run its course. Let us hope so."

Thoroughness, then, stands first; quantity, second. Abraham Lincoln was a well-furnished man, yet it is said that the books at his command as a boy and young man were but three—the Bible, Æsop's Fables and Bunyan's Pilgrim's Progress. But his acquaintance with these books was not that ordinarily seen to-day. He knew them through and through. Yet our larger privilege is no defense against a just charge of the superficial mental habit. Perhaps we have had few as great students

as Theodore Parker. "The first time I ever visited Theodore Parker," says Dr. Holmes, "he was not quite thirty years old, and I own that his reputation as a scholar had not reached me. In looking around his library I saw upon his shelves the great series of quartos-which I knew by their title only, if at all-Brucker's Historia Critica Philosophæ. 'You have hardly read that, I suppose,' I said, not thinking that any student, in these degenerate days, grappled with these megatherial monsters in primitive erudition. 'Oh yes, I have,' he answered very quietly; and then I, who thought I was dealing with a modest young divine of the regulation pattern, took another look at the massive head of the young man, whom Mr. Wendell Phillips has lately spoken of as the 'Jupiter of the pulpit.'" So much for the quantity of his reading. The quality of his study is well indicated by his own words: "The books which help you most are those which make you think most. The hardest way of learning is by easy reading; but a great book that comes from a great thinker,—it is a ship of thought, deep freighted with truth and with beauty." If we must think much to grasp the things presented in this chapter, things which belong at the very foundation of this subject of the hygiene of our reproductive system, may they, as Mr. Parker suggests, help us the more and bring us the more delight.

The interest and the difficulty which surround the study of the material universe are alike great. The first great division of the subject which we meet places simple matter, as existing in the form of minerals and all inorganic bodies, on the one side; on the other, matter that is joined with life, which includes all organized beings, our knowledge concerning which goes to make up the science of biology. Curiously enough we must at the outset acknowledge our inability to answer either question, What is matter? or What is life? Brande remarks of the first that "Of the ultimate nature of matter the human faculties cannot take cognizance; nor can data be furnished by observation

or experiment on which to found an investigation of it. All we know of it is its sensible properties." Professor Bain can come at no better definition than this, that "Matter is a double-faced somewhat, physical on one side and spiritual on the other." As to the second, no more striking proof of our ignorance of what really constitutes life is to be found than the laborious and roundabout efforts made to define it. "In seeking a definition of life, it is difficult to find one that does not include more than is necessary, or exclude something that should be taken in. Richerand's definition of life, that it is 'a collection of phenomena which succeed each other during a limited time in an organized body,' is equally applicable to the decay which goes on after death. According to De Blainville, 'life is the twofold internal movement of composition and decomposition, at once general and continuous.' As Mr. Herbert Spencer in his 'Principles of Biology' well observes, this conception is in some respects too narrow, and in other respects too wide. Thus, it excludes those nervous and muscular functions which form the most conspicuous and distinctive classes of vital phenomena, while it equally applies to the processes going on in a living body, and in a galvanic battery. Mr. Spencer proposed to define life as 'the co-ordination of actions,' but, as he observes, 'like the others, this definition includes too much, for it may be said of the solar system, with its regularly recuring movements and its self-balancing perturbations, that it also exhibits co-ordination of actions.' His present and amended conception of life is: 'The definite combination of heterogeneous changes, both simultaneous and successive, in correspondence with external co-existences and sequences.' One of the latest definitions of life is that which has been suggested by Mr. G. H. Lewes; 'Life is a series of definite and successive changes, both of structure and composition, which take place within an individual without destroying its identity.' This is perhaps as good a definition as has yet been given; but no one

of those we have quoted is more than approximately true, and a perfect definition of life seems to be an impossibility." Huxley, in a carefully worded discourse containing the statement, with reasons therefor, that he is "no materialist, but, on the contrary, believes materialism to involve grave philosophical error," is bold in his acknowledgment of our ignorance on these two fundamental points. He says: "For, after all, what do we know of this terrible 'matter,' except as a name for the unknown and hypothetical cause of states of our own consciousness? And what do we know of that 'spirit' over whose threatened extinction by matter a great lamentation is arising, like that which was heard at the death of Pan, except that it is also a name for an unknown and hypothetical cause, or condition, of states of consciousness? In other words, matter and spirit are but names for the imaginary substrata of groups of natural phenomena." And what are all these learned definitions of matter and life but scientific confessions of ignorance? One is reminded of the old saw: "What is matter? Never mind. What is mind? No matter."

With matter in its inorganic forms our present study is not concerned. But matter in its organized forms, matter wedded to life, the two great facts of the universe joined in their most intimate relationship, this is the Alpha and Omega of the science of reproduction. Science has ever been pushing its way down from the higher forms of animal life, where the methods of generation are plainly parental, to the lower, where the methods of propagation are not so apparent. This investigation has given rise to the terms biogenesis and abiogenesis. Biogenesis is the origin of life by parentage, a branch of science of daily moment to each one of the great human family, at the same time well-nigh universally neglected. Abiogenesis is the term which has succeeded the older and less exact phrase, "spontaneous generation," and is destined to become as familar to our ears as its predecessor became some years ago. It is the

name for the production of living by non-living matter—the birth of life from that which before had no life. We are to credit the term to Huxley, who, in an address in 1870, defined it, not by itself merely, but also in contradistinction to other allied terms, with which it is hardly necessary to encumber ourselves at present. Of old the battle raged over the debatable ground of spontaneous generation; now we call it abiogenesis, but the ground and the battle remain essentially the same. is fairly considered the most fundamental as well as the oldest of the questions raised by biology. And the ever-increasing urgency of physical inquiry has been felt to its full extent in this department. On the one hand stands medicine, anxious for definite information regarding its contagious diseases; on the other, evolution is impatient to have its probabilities changed into certainties. While over all, the great ultimatum of all science, the correlation of the physical forces, awaits a new confirmation. At present the whole doctrine is in abeyance, and abiogenesis can neither be positively denied nor affirmed. It is well known that the ancient philosophies were very favorable to this theory. This baby elephant which we of this later day find on our hands, was a great pet of the ancient dignitaries in thought and investigation. In the seventeenth century it was but necessary to prove by a simple experiment that the maggot found in putrefying flesh was not a spontaneous generation from that flesh's own decay, was not an instance in itself of abiogenesis, to make the name of the talented Italian, Francesco Redi, famous in this department. Ever since that time a constantly improving microscope, and a constantly rising standard of scientific experiment, have been driving the discussion from organism to organism down the scale of being - from the minute to the still more minute, until one is fairly reminded of the Yankee's remark about the "leetle end o' nothin," whittled down to a p'int."

For the "promise and potency" of all inorganic matter is

found in the atom; and the promise and potency of all organized matter, of all those forms of being which unite matter and life, is found in the cell. And just so long as the two first questions in the catechism of science, What is matter? and What is life? remain unanswered, just so long is it inevitable that we must go and keep going to the atom and the cell with our interrogatories. Those who oppose abiogenesis as being an untenable hypothesis, insist that all observations yet made which are worthy of credence, show living matter to be the offspring of pre-existing living matter only; that as we push our investigations farther and farther, the invariable result is to lessen the number of organisms which we cannot demonstrate to have arisen by parentage alone; that such supposed cases have been shown again and again to arise from germs found float. ing in the atmosphere, and like unexpected and occult sources. As an illustration of the countless wonders of the microscopic world which this discussion has brought to light, I quote from Professor Huxley; "It is at present a well-established fact that certain diseases, both of plants and of animals, which have all the characteristics of contagious and infectious epidemics, are caused by minute organisms. The smut of wheat is a wellknown instance of such a disease, and it cannot be doubted that the grape-disease and potato-disease fall under the same category. Among animals, insects are wonderfully liable to the ravages of contagious and infectious diseases caused by microscopic Fungi. In autumn, it is not uncommon to see flies, motionless upon a window-pane, with a sort of magic circle, in white, drawn around them. On microscopic examination, the magic circle is found to consist of innumerable spores, which have been thrown off in all directions by a minute fungus called Empusa Muscæ, the spore-forming filaments of which stand out like a pile of velvet from the body of the fly. These sporeforming filaments are connected with others which fill the interior of the fly's body like so much fine wool, having eaten

away and destroyed the creature's viscera. This is the full-grown condition of the *Empusa*.

"If traced back to its earlier stages, in flies which are still active, and to all appearance healthy, it is found to exist in the form of minute corpuscles which float in the blood of the fly. These multiply and lengthen into filaments, at the expense of the fly's substance; and, when they have at last killed the patient, they grow out of its body and give off spores. Healthy flies shut up with diseased ones catch this mortal disease and perish like the others. A most competent observer, M. Cohn, who studied the development of the Empusa in the fly very carefully, was utterly unable to discover in what manner the smallest germs of the Empusa got into the fly. The spores could not be made to give rise to such germs by cultivation; nor were such germs discoverable in the air, or in the food of the fly. It looked exceedingly like a case of abiogenesis, or, at any rate, of xenogenesis; and it is only quite recently that the real course of events has been made out. It has been ascertained, that when one of these spores falls upon the body of a fly, it begins to germinate and sends out a process which bores its way through the fly's skin; this, having reached the interior cavities of its body, gives off the minute floating corpuscles which are the earliest stage of the Empusa. The disease is 'contagious,' because a healthy fly coming in contact with a diseased one, from which the spore-bearing filaments protrude, is pretty sure to carry off a spore or two. It is 'infectious,' because the spores become scattered about all sorts of matter in the neighborhood of the slain flies."

Those who favor abiogenesis, while having to carry the incubus of all definite experiment so far made, which has given a uniform verdict in favor of biogenesis, and being obliged to resort to an ingenious and roundabout explaining away of these experiments, which shall put a construction upon them favorable to the position which they hold, have, nevertheless, an

immense weight of presumption on their side from the fact that it is a necessary and vital link in the chain of evolution, a doctrine whose power and probability grow daily. This fact of necessity to evolution has given abiogenesis no less a champion than Haeckel. Again, it militates against the old idea of "vital force" as an entity; an idea which has been an especially favorite one with physicians, but which is exceedingly distasteful to the modern scientist as a species.

Once more, the establishment of the truth of abiogenesis would fortify the weakest spot in Darwinism and the "Origin of Species;" for natural selection would thereby be relieved from the onerous task of evolving all species from one, or at most a very limited number of original forms. Still, the lack of positive evidence in its favor is well shown in that a man of Huxley's standing puts himself on record as declaring that "of the causes which have led to the origination of living matter, then, it may be said that we know absolutely nothing." The summing up of the present status of the case may be comprised within the words present failure and future possibilities. "But though I cannot express this conviction of mine too strongly, I must carefully guard myself against the supposition that I intend to suggest that no such thing as abiogenesis ever has taken place in the past, or ever will take place in the future. With organic chemistry, molecular physics, and physiology, yet in their infancy, and every day making prodigious strides, I think it would be the height of presumption for any man to say that the conditions under which matter assumes the properties we call 'vital' may not, some day, be artificially brought together. All I feel justified in affirming is, that I see no reason for believing that the feat has been performed yet." *

In connection with the study of the sciences of life, it is greatly interesting to note how the apparition of a conflict between science and religion, which has so alarmed very many

^{*} Huxley.

good people, steadily retreats in a diminishing perspective, while the growth of fraternal feeling between theologian and scientist is constant and hearty. That one begins his study with the Creator and the other with the creation, is certainly cause for anything but antagonism. Both of them, if worthy the name of honest searchers after truth, come what may, have the one common desire,—the establishing of that truth irrespective of preconceived opinions. Professor Tyndall says of inductive inquiry; "It requires patient industry, and an humble and conscientious acceptance of what Nature reveals. The first condition of success is an honest receptivity and a willingness to abandon all preconceived notions, however cherished, if they be found to contradict the truth. Believe me, a self-renunciation which has something noble in it, and of which the world never hears, is often enacted in the private experience of the true votary of science." A world of misunderstanding might have been avoided had we all adopted as our rule of debate, in that friction of mind upon mind to which we owe our best achievements, the wise saying that we should offer, rather than contend for, our opinions. I am not certain that it is to Dr. Woolsey, ex-president of Yale College, we are indebted for the saying; but certain only that he is a most scholarly embodiment of the maxim. "True science and true religion," says Professor Huxley at the close of a course of lectures, "are twin-sisters, and the separation of either from the other is sure to prove the death of both. Science prospers exactly in proportion as it is religious; and religion flourishes in exact proportion to the scientific depth and firmness of its basis. The great deeds of philosophers have been less the fruit of their intellect than of the direction of that intellect by an eminently religious tone of mind. Truth has yielded herself rather to their patience, their love, their single-heartedness, and their self-denial, than to their logical acumen."

One cannot read the sermon of Bishop Simpson before the Methodist Œcumenical Conference recently held in London, without a suggestion of these things lingering in the mind. Taking as his text, "The words that I speak unto you, they are spirit and they are life," he said, among other things: "The words of Christ are accompanied by an unseen spiritual power, which is indissolubly joined with them, and thus they become spirit and life. How the spiritual can be joined to the material we cannot explain. We cannot by experiment in science discover those hidden chains; but we have analogies in Nature all around us. Where are the cords which bind this earth to yonder sun, or that hold the moon to this earth? What is gravitation, that controls all the grosser elements? What is it the loadstone imparts by its mysterious touch to the needle, which makes it our safe guide through darkness and storm? We can see results; but we cannot look deeply into Nature. What is it that gives that minute seed power to expand and develop into the beautiful plant? You call it life. But what is that life? The chemist has never found it. es. e anatomist has never detected it. I take a grain of wheat to my friend, the chemist, and he analyzes it. He tells me there is so much Carbon, Hydrogen, etc. I ask him to make me a grain of wheat, and he takes the various substances in their proper proportions and presents me the result. It looks like a grain of wheat, it has the same weight and form and color, and I cannot distinguish it from a grain which God has made. But plant it. It will not grow. But the grain which God has made, though kept in Egypt's catacombs for three thousand years, if given light and heat and moisture, will develop a stalk producing its like. What is the difference? The one has life, the other has not.

"So with the words of Christ. They are like other words. They sound, are spelled, and printed like other words; but God has joined with them a spirit and life which affect the heart

of man. He gives to His own word an accompaniment of wonderful power. He is Himself present in His word and its only limit is His own grand design.

"Certain classes of scientists love to descant upon the age of the world, and fancy that, by removing the period of creation millions of years back into eternity, they weaken our faith in a personal Creator and in His supervising care; but they greatly mistake. No matter how many myriads of ages may have elapsed or through how many convulsions the world may have passed, the truth still stands. 'In the beginning God created the heaven and the earth.' More than this, He upholdeth 'all things by the word of His power.' There must be a power present in the movement of all machinery; there must be a living force guiding the movements of the universe. The act of creation, though so sublime and glorious, is little more glorious than that of preserving and perpetuating. If from untold myriads of years this universe has existed, God's plans are older still; and that ability of Nature's laws but demonstrates that God is the seent yesterday that He is to-day, and He will be the same for ever. What power is there in that word that upholdeth all things! Could a jeweller produce a watch capable of keeping time for a hundred years, without erring a second, of what priceless value would it be, and how greatly we should admire the skill of the artist! What shall we say, then, of Him who holds the machinery of unnumbered worlds for untold ages in perfect harmony? Nor has one atom ever been lost. Science shows us that forms perpetually change, but substances endure. Nothing perishes. In this sense it is true that not a jot or tittle of His Word shall ever fail.

"Great as is the creation and preservation of worlds, there is something higher in life. The one is passive, the other active. St. John says of Christ: 'In Him was life.' He was the author of life. He breathed into man a living soul. His Word perpetuates natural life, and how numberless are its forms and

varieties! Think of vegetable life in shrub and plant and tree. in the moss that covers the rock or tinges with red the snow. Think of animal life in all its species. It is said that 320,000 species have been classified, and that probably the half have not been found. In what strange varieties and what singular forms does this life exist! Life in the branches of moss. in the drop of water. Vegetable life below the surface of the earth, in unturned soil. Animal life in every layer or drop of the sea. In Summer heat the very dust of the earth seems alive, and the air is full of living beings. Life is in the microscopic insect, as well as in the elephant. It co-exists with almost every form of matter and in almost every temperature. The scientific world was startled the other day by the announcement that organized forms had been discovered in aerolites, and a distinguished savant suggested that possibly life might in this way have first reached our earth from more advanced worlds. Without discussing the probability of this fancy, if it were true that life could come in the midst of a glowing mass of incandescent matter, under what fearful surroundings might it exist.

"What endless gradations in the character of that life, from the worm, that riots and multiplies in corruption, to man, who bears the image of God and is his vice-general on earth—from life for a moment to life everlasting. God's great lesson seems to be that life, though working through form, is independent of form; that life is as truly in the insect, whose shadowy form is scarcely visible in the microscope, as in the great whale, that makes the ocean boil."

And not only is there this unity of life through all its diversities, but unity of matter as well. Everywhere we find matter and life inseparably linked together. The bond of unity running through all life we readily perceive. The bond of unity running through the matter bound up with that life we do not as easily see. Yet there is a fundamental living substance, a

"physical basis of life," to which modern science has given the name of protoplasm. Protoplasm; that word which so well serves to point out the condition of things brought about by the multiplication of the means of obtaining information. What careless mental habits we all indulge. For all of us, those even who are the most casual students and the most casual readers, would be ashamed to be ignorant of the term. We are all familiar with it; yet I am inclined to think that if anyone should ask us what we understood by it, we should be compelled to confess our notions regarding it to be exceedingly vauge. I have such a hearty regard for the vigorous and perspicuous English of which that giant in this department, Professor Huxley, makes use, as well as for his scientific attainments, that I shall ask you to pardon me in letting him alone speak to us on this topic. Indeed I am sure you would not pardon me did I do otherwise, and shall be content to quote extensively from him.

"In order to make the title of this discourse generally intelligible, I have translated the term 'Protoplasm,' which is the scientific name of the substance of which I am about to speak by the words, 'the physical basis of life.' I suppose that, to many, the idea that there is such a thing as a physical basis, or matter, of life may be novel—so widely spread is the conception of life as a something which works through matter, but is independent of it; and even those who are aware that matter and life are inseparably connected, may not be prepared for the conclusion plainly suggested by the phrase, 'the physical basis or matter of life,' that there is some one kind of matter which is common to all living beings, and that their endless diversities are bound together by a physical, as well as an ideal, unity. In fact, when first apprehended, such a doctrine as this appears almost shocking to common sense.

"What, truly, can seem to be more obviously different from one another, in faculty, in form, and in substance, than the

various kinds of living beings? What community of faculty can there be between the brightly-colored lichen, which so nearly resembles a mere mineral incrustation of the bare rock on which it grows, and the painter, to whom it is instinct with beauty, or the botanist, whom it feeds with knowledge?

"Again, think of the microscopic fungus—a mere infinitesimal ovoid particle, which finds space and duration enough to multiply into countless millions in the body of a living fly; and then of the wealth of foliage, the luxuriance of flower and fruit, which lies between this bald sketch of a plant and the giant pine of California, towering to the dimensions of a cathedral spire, or the Indian fig, which covers acres with its profound shadow, and endures while nations and empires come and go around its vast circumference. Or, turning to the other half of the world of life, picture to yourselves the great Finner whale, hugest of beasts that live, or have lived, disporting his eighty or ninety feet of bone, muscle, and blubber, with easy roll, among waves in which the stoutest ship that ever left dockyard would founder hopelessly; and contrast him with the invisible animalcules-mere gelatinous specks, multitudes of which could, in fact, dance upon the point of a needle with the same ease as the angels of the Schoolmen could, in imagination. With these images before your minds, you may well ask, what community of form, or structure, is there between the animalcule and the whale; or between the fungus and the fig-tree? And, a fortiori, between all four?

"Finally, if we regard substance, or material composition, what hidden bond can connect the flower which a girl wears in her hair and the blood which courses through her youthful veins; or, what is there in common between the dense and resisting mass of the oak, or the strong fabric of the toirtoise, and those broad discs of glassy jelly which may be seen pulsating through the waters of a calm sea, but which drain away to mere films in the hand which raises them out of their element?

- "Such objections as these must, I think, arise in the mind of every one who ponders, for the first time, upon the conception of a single physical basis of life underlying all the diversities of vital existence; but I propose to demonstrate to you that, notwithstanding these apparent difficulties, a threefold unity—namely, a unity of power or faculty, a unity of form, and a unity of substantial composition—does pervade the whole living world.
- "No very abstruse argumentation is needed, in the first place, to prove that the powers, or faculties, of all kinds of living matter, diverse as they may be in degree, are substantially similar in kind.
- "Goethe has condensed a survey of all the powers of mankind into the well-known epigram:—

'Warum treibt sich das Volk so und schreit? Es will sich ernahren Kinder zengen, und die nahren so gut es vermag.

Weiter bringt es Kein Mensch, still er sich wie er auch will.'

"In physiological language this means, that all the multifarious and complicated activities of man are comprehensible under three catagories. Either they are immediately directed towards the maintenance and development of the body, or they effect transitory changes in the relative positions of parts of the body, or they tend towards the continuance of the species. Even those manifestations of intellect, of feeling, and of will, which we rightly name the higher faculties, are not excluded from this classification, inasmuch as to every one but the subject of them, they are known only as transitory changes in the relative positions of parts of the body. Speech, gesture, and every other form of human action are, in the long run, resolvable into muscular contraction, and muscular contraction is but a transitory change in the relative positions of the parts of a muscle. But the scheme which is large enough to embrace the activities of the highest form of life, covers all those of the lower creatures. The lowest plant, or animalcule, feeds, grows, and reproduces its kind. In addition, all animals manifest those transitory changes of form which we class under irritability and contractility; and, it is more than probable, that when the vegetable world is thoroughly explored, we shall find all plants in possession of the same powers, at one time or other of their existence.

"I am not now alluding to such phenomena, at once rare and conspicuous, as those exhibited by the leaflets of the sensitive plant, or the stamens of the barberry, but to much more widelyspread, and, at the same time, more subtle and hidden, manifestations of vegetable contractility. You are doubtless aware that the common nettle owes its stinging property to the innumerable stiff and needle-like, though exquisitely delicate, hairs which cover its surface. Each stinging-needle tapers from a broad base to a slender summit, which, though rounded at the end, is of such microscopic fineness that it readily penetrates, and breaks off in, the skin. The whole hair consists of a very delicate outer case of wood, closely applied to the inner surface of which is a layer of semi-fluid matter, full of innumerable granules of extreme minuteness. This semi-fluid lining is protoplasm, which thus constitutes a kind of bag, full of a limpid liquid, and roughly corresponding in form with the interior of the hair which it fills. When viewed with a sufficiently high magnifying power, the protoplasmic layer of the nettle hair is seen to be in a condition of unceasing activity. Local contractions of the whole thickness of its substance pass slowly and gradually from point to point, and give rise to the appearance of progressive waves, just as the bending of successive stalks of corn by a breeze produces the apparent billows of a cornfield.

"But, in addition to these movements, and independently of them, the granules are driven, in relatively rapid streams, through channels in the protoplasm which seem to have a considerable amount of persistance. Most commonly, the currents in adjacent parts of the protoplasm take similar directions; and, thus, there is a general stream up one side of the hair and down the other. But this does not prevent the existence of partial currents which take different routes; and, sometimes, trains of granules may be seen coursing swiftly in opposite directions, within a twenty-thousandth of an inch of one another; while, occasionally, opposite streams come into direct collision, and, after a longer or shorter struggle, one predominates. The cause of these currents seems to lie in contractions of the protoplasm which bounds the channels in which they flow, but which are so minute that the best microscopes show only their effects, and not themselves.

"The spectacle afforded by the wonderful energies prisoned within the compass of the microscopic hair of a plant, which we commonly regard as a merely passive organism, is not easily forgotten by one who has watched its display, continued hour after hour, without pause or sign of weakening. The possible complexity of many other organic forms, seemingly as simple as the protoplasm of the nettle, dawns upon one; and the comparison of such a protoplasm to a body with an internal circulation, which has been put forward by an eminent physiologist, loses much of its startling character. Currents similar to those of the hairs of the nettle have been observed in a great multitude of very different plants, and weighty authorities have suggested that they probably occur, in more or less perfection, in all young vegetable cells. If such be the case, the wonderful noonday silence of a tropical forest is, after all, due only to the dulness of our hearing; and could our ears catch the murmur of these tiny maelstroms, as they whirl in the innumerable myriads of living cells which constitute each tree, we should be stunned, as with the roar of a great city.

"Among the lower plants, it is the rule rather than the exception, that contractility should be still more openly mani-

fested at some period of their existence. The protoplasm of Algo and Fungi becomes, under many circumstances, partially, or completely, freed from its woody case, and exhibits movements of its whole mass, or is propelled by the contractility of one, or more, hair-like prolongations of its body, which are called vibratile cilia. And, so far as the conditions of the manifestations of the phenomena of contractility have yet been studied, they are the same for the plant as for the animal. Heat and electric shocks influence both, and in the same way, though it may be in different degrees. It is by no means my intention to suggest that there is no difference in faculty between the lowest plant and the highest, or between plants and animals. But the difference between the powers of the lowest plant, or animal, and those of the highest, is one of degree, not of kind, and depends, as Milne-Edwards long ago so well pointed out, upon the extent to which the principle of the division of labor is carried out in the living economy. In the lowest organism all parts are competent to perform all functions, and one and the same portion of protoplasm may successively take on the function of feeding, moving, or reproducing apparatus. In the highest, on the contrary, a great number of parts combine to perform each function, each part doing its alloted share of the work with great accuracy and efficiency, but being useless for any other purpose.

"On the other hand, notwithstanding all the fundamental resemblances which exist between the powers of the protoplasm in plants and in animals, they present a striking difference (to which I shall advert more at length presently), in the fact that plants can manufacture fresh protoplasm out of mineral compounds, whereas animals are obliged to procure it ready-made, and hence, in the long run, depend upon plants. Upon what condition this difference in the powers of the two great divisions of the world of life depends, nothing is at present known.

"With such qualification as arises out of the last-mentioned

fact, it may be truly said that the acts of all living things are fundamentally one. Is any such unity predicable of their forms? Let us seek in easily verified facts for a reply to this question. If a drop of blood be drawn by pricking one's finger, and viewed with proper precautions and under a sufficiently high microscopic power, there will be seen, among the innumerable multitude of little, circular, discoidal bodies, or corpuscles, which float in it and give it its color, a comparatively small number of colorless corpuscles, of somewhat larger size and very irregular shape. If the drop of blood be kept at the temperature of the body, these colorless corpuscles will be seen to exhibit marvellous activity, changing their forms with great rapidity, drawing in and thrusting out prolongations of their substance, and creeping about as if they were independent organisms.

"The substance which is thus active is a mass of protoplasm, and its activity differs in detail, rather than in principle, from that of the protoplasm of the nettle. Under sundry circumstances the corpuscle dies and becomes distended into a round mass, in the midst of which is seen a smaller spherical body, which existed, but was more or less hidden, in the living corpuscle, and is called its nucleus. Corpuscles of essentially similar structure are to be found in the skin, in the lining of the mouth, and scattered through the whole framework of the body. Nay, more; in the earliest condition of the human organism, in that state in which it has but just become distinguishable from the egg in which it arises, it is nothing but an aggregation of such corpuscles, and every organ of the body was, once, no more than such an aggregation.

"Thus a nucleated mass of protoplasm turns out to be what may be termed the structural unit of the human body. As a matter of fact, the body, in its earliest state, is a mere multiple of such units; and, in its perfect condition, it is a multiple of such units, variously modified.

"But does the formula which expresses the essential structural character of the highest animal cover all the rest, as the statement of its powers and faculties covered that of all others? Very nearly. Beast and fowl, reptile and fish, mollusk, worm and polype, are all composed of structural units of the same character, namely, masses of protoplasm with a nucleus. There are sundry very low animals, each of which, structurally, is a mere colorless blood-corpuscle, leading an independent life. But at the very bottom of the animal scale, even this simplicity becomes simplified, and all the phenomena of life are manifested by a particle of protoplasm without a nucleus. Nor are such organisms insignificant by reason of their want of complexity. It is a fair question whether the protoplasm of those simplest forms of life, which people an immense extent of the bottom of the sea, would not outweigh that of all the higher living beings which inhabit the land put together. And in ancient times, no less than at the present day, such living beings as these have been the greatest of rock builders.

"What has been said of the animal world is no less true of plants. Imbedded in the protoplasm at the broad, or attached end of the nettle hair, there lies a spheroidal nucleus. Careful examination further proves that the whole substance of the nettle is made up of a repetition of such masses of nucleated protoplasm, each contained in a wooden case, which is modified in form, sometimes into a woody fibre, sometimes into a duct or spiral vessel, sometimes into a pollen grain, or an ovule. Traced back to its earliest state, the nettle arises as the man does, in a particle of nucleated protoplasm. And in the lowest plants, as in the lowest animals, a single mass of such protoplasm may constitute the whole plant, or the protoplasm may exist without a nucleus.

"Under these circumstances it may well be asked, how is one mass of non-nucleated protoplasm to be distinguished from another? why call one 'plant' and the other 'animal'?

"The only reply is that, so far as form is concerned, plants and animals are not separable, and that, in many cases, it is a mere matter of convention whether we call a given organism an animal or a plant. There is living body called Æthalium Septicum, which appears upon decaying vegetable substances, and, in one of its forms, is common upon the surfaces of tan-pits. this condition it is, to all intents and purposes, a fungus, and formerly was always regarded as such; but the remarkable investigations of De Bary have shown that, in another condition, the Æthalium is an actively locomotive creature, and takes in solid matters, upon which, apparently, it feeds, thus exhibiting the most characteristic feature of animality. Is this a plant; or is it an animal? Is it both; or is it neither? Some decide in favor of the last supposition, and establish an intermediate kingdom, a sort of biological no man's land for all these questionable forms. But, as it is admittedly impossible to draw any distinct boundary line between this no man's land and the vegetable world on the one hand, or the animal, on the other, it appears to me that this proceeding merely doubles the difficulty which, before, was single.

"Protoplasm, simple or nucleated, is the formal basis of all life. It is the clay of the potter: which, bake it and paint it as he will, remains clay, separated by artifice, and not by nature, from the commonest brick or sun-dried clod.

"Thus it becomes clear that all living powers are cognate, and that all living forms are fundamentally of one character. The researches of the chemist have revealed a no less striking uniformity of material composition in living matter.

"In perfect strictness, it is true that chemical investigation can tell us little or nothing, directly, of the composition of living matter, inasmuch as such matter must needs die in the act of analysis,—and upon this very obvious ground, objections, which I confess seem to me to be somewhat frivolous, have been raised to the drawing of any conclusions whatever

respecting the composition of actually living matter, from that of the dead matter of life, which alone is accessible to us. But objectors of this class do not seem to reflect that it is also, in strictness, true that we know nothing about the composition of any body whatever, as it is. The statement that a crystal of calc-spar consists of carbonate of lime, is quite true, if we only mean that, by appropriate processes, it may be resolved into carbonic acid and quicklime. If you pass the same carbonic acid over the very quicklime thus obtained, you will obtain carbonate of lime again; but it will not be calc-spar, nor anything like it. Can it, therefore, be said that chemical analysis teaches nothing about the chemical composition of calc-spar? Such a statement would be absurd; but it is hardly more so than the talk one occasionally hears about the uselessness of applying the results of chemical analysis to the living bodies which have yielded them.

"One fact, at any rate, is out of reach of such refinements, and this is, that all the forms of protoplasm which have yet been examined contain the four elements, carbon, hydrogen, oxygen and nitrogen, in very complex union, and that they behave similarly towards several re-agents. To this complex combination, the nature of which has never been determined with exactness, the name of Protein has been applied. And if we use this term with such caution as may properly arise out of our comparative ignorance of the things for which it stands, it may be truly said, that all protoplasm is proteinaceous, or, as the white, or albumen, of an egg is one of the commonest examples of a nearly pure protein matter, we may say that all living matter is more or less Albuminoid.

"Perhaps it would not yet be safe to say that all forms of protoplasm are affected by the direct action of electric shocks; and yet the number of cases in which the contraction of protoplasm is shown to be affected by this agency, increases every day.

"Nor can it be affirmed with perfect confidence, that all forms of protoplasm are liable to undergo that peculiar coagulation at a temperature of 40°—50° centigrade, which has been called 'heat-stiffening,' though Kuhne's beautiful researches have proved this occurrence to take place in so many and such diverse living beings, that it is hardly rash to expect that the law holds good for all.

"Enough has, perhaps, been said to prove the existence of a general uniformity in the character of the protoplasm, or physical basis, of life, in whatever group of living beings it may be studied. But it will be understood that this general uniformity by no means excludes any amount of special modifications of the fundamental substance. The mineral, carbonate of lime, assumes an immense diversity of characters, though no one doubts that, under all these Protean changes, it is one and the same thing.

"And now, what is the ultimate fate, and what the origin, of the matter of life?

"Is it, as some of the older naturalists supposed, diffused throughout the universe in molecules, which are indestructible and unchangeable in themselves; but, in endless transmigration, unite in innumerable permutations, into the diversified forms of life we know? Or, is the matter of life composed of ordinary matter, differing from it only in the manner in which its atoms are aggregated? Is it built up of ordinary matter, and again resolved into ordinary matter when its work is done?

"Modern science does not hesitate a moment between these alternatives. Physiology writes over the portals of life—

'Debemur Morti nos nostraque,'

with a profounder meaning than the Roman poet attached to that melancholy line. Under whatever disguise it takes refuge, whether fungus or oak, worm or man, the living protoplasm not only ultimately dies and is resolved into its mineral and lifeless constituents, but is always dying, and, strange as the paradox may sound, could not live unless it died.

"In the wonderful story of the 'Peau de Chagrin,' the hero becomes possessed of a magical wild ass' skin, which yields him the means of gratifying all his wishes. But its surface represents the duration of the proprietor's life; and for every satisfied desire the skin shrinks in proportion to the intensity of fruition, until at length life and the last hand-breadth of the peau de chagrin disappear with the gratification of a last wish.

"Balzac's studies had led him over a wide range of thought and speculation, and his shadowing forth of physiological truth in this strange story may have been intentional. At any rate, the matter of life is a veritable peau de chagrin, and for every vital act it is somewhat the smaller. All work implies waste, and the work of life results, directly or indirectly, in the waste of protoplasm.

"Every word uttered by a speaker costs him some physical loss; and, in the strictest sense, he burns that others may have light—so much eloquence, so much of his body resolved into carbonic acid, water, and urea. It is clear that this process of expenditure cannot go on forever. But, happily, the protoplasmic peau de chagrin differs from Balzac's in its capacity of being repaired, and brought back to its full size, after every exertion.

"For example, this present lecture, whatever its intellectual worth to you, has a certain physical value to me, which is, conceivably, expressible by the number of grains of protoplasm and other bodily substance wasted in maintaining my vital processes during its delivery. My peau de chagrin will be distinctly smaller at the end of the discourse than it was at the beginning. By and by, I shall probably have recourse to the substance commonly called mutton, for the purpose of stretching it back to its original size. Now this mutton was once the living protoplasm, more or less modified, of another animal—

a sheep. As I shall eat it, it is the same matter altered, not only by death, but by exposure to sundry artificial operations in the process of cooking.

"But these changes, whatever be their extent, have not rendered it incompetent to resume its old functions as matter of life. A singular inward labratory, which I possess, will dissolve a certain portion of the modified protoplasm; the solution so formed will pass into my veins; and the subtle influences to which it will then be subjected will convert the dead protoplasm into living protoplasm, and transubstantiate sheep into man.

"Nor is this all. If digestion were a thing to be trifled with, I might sup upon lobster, and the matter of life of the crustacean would undergo the same wonderful metamorphosis into humanity. And were I to return to my own place by sea, and undergo shipwreck, the crustacea might, and probably would, return the compliment, and demonstrate our common nature by turning my protoplasm into living lobster. Or, if nothing better were to be had, I might supply my wants with mere bread, and I should find the protoplasm of the wheat-plant to be convertible into man, with no more trouble than that of the sheep, and with far less, I fancy, than that of the lobster.

"Hence it appears to be a matter of no great moment what animal, or what plant, I lay under contribution for protoplasm, and the fact speaks volumes for the general identity of that substance in all living beings. I share this catholicity of assimilation with other animals, all of which, so far as we know, could thrive equally well on the protoplasm of any of their fellows, or of any plant; but here the assimilative powers of the animal world cease. A solution of smelling-salts in water, with an infinitesimal proportion of some other saline matters, contains all the elementary bodies which enter into the composition of protoplasm; but, as I need hardly say, a hogshead of that fluid would not keep a hungry man from starving, nor

would it save any animal whatever from a like fate. An animal cannot make protoplasm, but must take it ready-made from some other animal, or some plant—the animal's highest feat of constructive chemistry being to convert dead protoplasm into that living matter of life which is appropriate to itself.

"Therefore, in seeking for the origin of protoplasm we must eventually turn to the vegetable world. The fluid containing carbonic acid, water, and ammonia, which offers such a Barmecide feast to the animal, is a table richly spread to multitudes of plants; and, with a due supply of only such materials, many a plant will not only maintain itself in vigor, but grow and multiply until it has increased a million-fold, or a million million-fold, the quantity of protoplasm which it originally possessed; in this way building up the matter of life, to an indefinite extent, from the common matter of the universe.

"Thus, the animal can only raise the complex substance of dead protoplasm to the higher power, as one may say, of living protoplasm; while the plant can raise the less complex substances - carbonic acid, water, and ammonia - to the same stage of living protoplasm, if not to the same level. But the plant also has its limitations. Some of the fungi, for example, appear to need higher compounds to start with; and no known plant can live upon the uncompounded elements of protoplasm. A plant supplied with pure carbon, hydrogen, oxygen, and nitrogen, phosphorus, sulphur, and the like, would as infallibly die as the animal in his bath of smelling-salts, though it would be surrounded by all the constituents of protoplasm. Nor, indeed, need the process of simplification of vegetable food be carried so far as this, in order to arrive at the limit of the plant's thaumaturgy. Let water, carbonic acid, and all the other needful constituents be supplied with ammonia, and an ordinary plant will still be unable to manufacture protoplasm.

"Thus the matter of life, so far as we know it (and we have no right to speculate on any other), breaks up, in consequence of that continual death which is the condition of its manifesting vitality, into carbonic acid, water, and ammonia, which certainly possess no properties but those of ordinary matter. And out of these same forms of ordinary matter, and from none which are simpler, the vegetable world builds up all the protoplasm which keeps the animal world a-going. Plants are the accumulators of the power which animals distribute and disperse.

"But it will be observed, that the existence of the matter of life depends on the pre-existence of certain compounds; namely, carbonic acid, water, and ammonia. Withdraw any one of these three from the world, and all vital phenomena come to an end. They are related to the protoplasm of the plant, as the protoplasm of the plant is to that of the animal. Carbon, hydrogen, oxygen, and nitrogen are all lifeless bodies. Of these, carbon and oxygen unite, in certain proportions and under certain conditions, to give rise to carbonic acid; hydrogen and oxygen produce water; nitrogen and hydrogen give rise to ammonia. These new compounds, like the elementary bodies of which they are composed, are lifeless. But when they are brought together, under certain conditions they give rise to the still more complex body, protoplasm, and this protoplasm exhibits the phenomena of life.

"I see no break in this series of steps in molecular complication, and I am unable to understand why the language which is applicable to any one term of the series may not be used to any of the others. We think fit to call different kinds of matter carbon, oxygen, hydrogen, and nitrogen, and to speak of the various powers and activities of these substances as the properties of the matter of which they are composed.

"When hydrogen and oxygen are mixed in a certain proportion, and an electric spark is passed through them, they disappear, and a quantity of water, equal in weight to the sum of their weights, appears in their place. There is not the slightest parity between the passive and active powers of the water and those of the oxygen and hydrogen which have given rise to it. At 32° Fahrenheit, and far below that temperature, oxygen and hydrogen are elastic gaseous bodies, whose particles tend to rush away from one another with great force. Water, at the same temperature, is a strong though brittle solid, whose particles tend to cohere into definite geometrical shapes, and sometimes build up frosty imitations of the most complex forms of vegetable foliage.

"Nevertheless we call these, and many strange phenomena, the properties of the water, and we do not hesitate to believe that, in some way or another, they result from the properties of the component elements of the water. We do not assume that a something called 'aquosity' entered into and took possession of the oxide of hydrogen as soon as it was formed, and then guided the aqueous particles to their places in the facets of the crystal, or amongst the leaflets of the hoar-frost. On the contrary we live in the hope and in the faith that, by the advance of molecular physics, we shall by and by be able to see our way as clearly from the constituents of water to the properties of water, as we are now able to deduce the operations of a watch from the form of its parts and the manner in which they are put together.

"Is the case in any way changed when carbonic acid, water, and ammonia disappear, and in their place, under the influence of pre-existing living protoplasm, an equivalent weight of the matter of life makes its appearance?

"It is true that there is no sort of parity between the properties of the components and the properties of the resultant, but neither was there in the case of the water. It is also true that what I have spoken of as the influence of pre-existing living matter is something quite unintelligible; but does anybody quite comprehend the *modus operandi* of an electric spark, which traverses a mixture of oxygen and hydrogen?

"What justification is there, then, for the assumption of the

existence in the living matter of a something which has no representative, or correlative, in the not living matter which gave rise to it? What better philosophical status has 'vitality' than 'aquosity?' And why should 'vitality' hope for a better fate than the other 'itys' which have disappeared since Martinus Scriblerus accounted for the operation of the meat-jack by its inherent 'meat-roasting quality,' and scorned the 'materialism' of those who explained the turning of the spit by a certain mechanism worked by the draught of the chimney?

"If scientific language is to possess a definite and constant signification whenever it is employed, it seems to me that we are logically bound to apply to the protoplasm, or physical basis of life, the same conceptions as those which are held to be legitimate elsewhere. If the phenomena exhibited by water are its properties, so are those presented by protoplasm, living or dead, its properties." *

Per contra, the noted French scientist, Quatrefages, from the other side of the English Channel, remarks; "I have repeatedly, and for many years, maintained the doctrine which I have summed up here. It seems to me confirmed in the highest degree by the researches undertaken for the elucidation of the problem of which we are treating. The experiences of M. Bernard, in particular, relative to the action exercised by anæsthetics upon plants as well as upon animals, makes it impossible for us to doubt for a moment the intervention of an agent distinct from physico-chemical forces in organic beings. In employing the word Life to designate this agent, I only make use of an established expression, without pretending to go beyond the information gained from experiment and scientific observation." †

However, I must beg you not to misapprehend Huxley's position. It is easy to misunderstand a fragment. Of the whole he himself says, "The Essay On the Physical Basis of Life' was intended to contain a plain and untechnical statement

^{*} On the Physical Basis of Life. † The Human Species.

of one of the great tendencies of modern biological thought, accompanied by a protest, from the philosophical side, against what is commonly called Materialism. The result of my well-meant efforts I find to be, that I am generally credited with having invented 'protoplasm' in the interests of 'materialism.'" Again: "This union of materialistic terminology with the repudiation of materialistic philosophy I share with some of the most thoughtful men with whom I am acquainted."

Passing now from the origin of living matter to its functions, that is, the actions of which it is capable, we find that they may all be included in three classes. First, the nutritive, second, the reproductive, and third, the motive. The nutritive functions form the class concerning which we are, perhaps, best informed. The popular works on the maintenance of health, the sanitary articles in our newspapers, and the physiology taught in our schools devote so large a proportion of their attention to this class of functions, that the public is familiar with its workings to a very gratifying extent;—gratifying in spite of the somewhat phenominal variance between its knowledge and its practice in this direction. It is to the exercise of this function that we owe the preservation of the balance between the processes of waste on the one side, and those of repair on the other. The difference existing just at this point between the inorganic and organic worlds, is well put by Quatrefages. "A crystal, as M. Naudin has well remarked, closely resembles one of those regular piles of shot which may be seen in every arsenal. It only increases from the exterior, as the pile is increased when the soldier adds a fresh layer of shot; its molecules are just as immovable as the balls of iron. It is exactly the contrary with the organized being, and the simpler its composition the greater the contrast. The small size of the moneron and the amœba prevents, it is true, certain observations. I appeal, however, to all those naturalists who have studied certain marine sponges in a living state. They must like myself have remarked the strange activity of the *vital* whirlpool in the semi-sarcodic substance which surrounds their siliceous or horny skeleton; they will have seen the sea water in which they are placed move with a rapidity which it never exhibits when in contact with any other animal.

"The reason is that, in the organized being, the repose of the crystal is replaced by an incessant movement; that, instead of remaining immovable and unalterable, the molecules are unceasingly undergoing transformation, changing their composition, producing fresh substances, retaining some and rejecting others. Far from resembling a pile of shot, the organized being may much rather be compared to the combination of a number of physico-chemical apparatus, constantly in action to burn or reduce materials borrowed from without, and ever making use of their own substance for its incessant renewal.

"In other words, in the crystal once formed the forces remain in a state of stable equilibium, which is only interrupted by the influence of exterior causes. Hence the possibility of its indefinite continuance without any change either of its forms or of its properties. In the organized being the equilibrium is unstable, or rather, there is no equilibrium properly so called. Every moment the organized being expends as much force as matter, and owes its continuance solely to the balance of the gain and loss. Hence the possibility of a modification of its properties and form without its ceasing to exist."

Of the third class of functions, with its interesting studies of the temporary changes of form, modifying the relations of part to part, and of the entire organism to surrounding substances; of its special tissues of muscle and nerve and special sense, we cannot stop to speak. The second class, the reproductive, embraces the special object of our present research. But before entering upon the consideration of the subject as applied to man solely, it is appropriate that we turn our attention for a few moments to generation in its broader aspects. Lest this chapter

become swollen to undue proportions, we will reserve this department of the subject in hand for the succeeding chapter; only remarking, while we have freshly in mind this trinity of function, that this trinity is well worthy a place in one's memory; and that as apt and accurate a phrasing as its members have received, is respectively, the sustentative, the generative, the correlative.

CHAPTER III.

REPRODUCTION.

From time immemorial no more constant affinity has been recognized than that most artless affection existing between every laddie and his lassie on the one hand, and the silent orb of night, prosily called the moon, on the other. No one has ever failed to recognize this natural law of attraction. the occasion of the sympathetic outpourings of the poet, of the tender picturings of the writer of fiction, of the pointed thrust of the merciless satirist at that spot where all are most defenceless; it matters not, all alike acknowledge the reality of the fact. And I most seriously question whether the genus homo is ever to be emancipated from the infection of this moony disorder. would not be a pathological pessimist. Nor would I close my eyes to the fact that it is just beginning to dawn upon medicine that what the vaccine virus is to small-pox, so, doubtless, is some other something to each and all of their respective zymotic diseases. But who is that daring scientist who shall venture to charge the end of an ivory point with moonshine, so that the family physician may vaccinate the flower of the family with it, and by this means avert that singular malady where all the ordinary rules of good nursing must be reversed; where the mother, by that strange exception which proves the rule of all other sicknesses, is not eligible as night-watcher, but the vigil must needs be kept by some youth of the masculine persuasion. Who in these later times could be found to exhibit a bravery which would dare persecutions compared with which those of Jenner appear as the coronation of popular approval;

which would imprison in a hypodermic syringe those "germs" found floating in countless myriads in the moonbeam, the growth and multiplication of which in the human heart when deposited there under favorable conditions is the essential cause of the disorder in question, and by carefully injecting them directly into the vein of the lovely Desdemona, without allowing them to come in contact with any of the surrounding tissues, thereby accomplish an innoculation which shall render aged fathers forever safe from Moor and Roderigo alike? I fear me that the cannonade greeting an innovation of such temerity would dwarf into insignificance the flame and thunder which surrounded the light brigade in their charge at Balaklava.

Again, the friendship between the lovers and the moon is certainly that attraction of opposite poles of which we hear so much. For they themselves are instinct with life, are full of the instincts of life, nothing is farther from their thought or desire than death. Yet in cultivating an admiration for the mistress of night, they are forgetting their own planet, teeming with life, of which life they themselves are the highest manifestation, that they may remember that secondary planet, that dead planet, out of whose existence all life has fled, with no atmospheric sea enveloping its asperities of surface, where, says Humboldt, "no undulation of air can convey sound, song or speech." The breath of life is gone out from its rugged solitudes. The lovers are keeping watch with a mummy.

How great the difference between that satellite and this world-home of ours. Here everything is life, life animal and life vegetable, so abounding and so intertwined that our friends the naturalists find it hard to draw for us the exact line where the one ceases and the other begins. The seas are peopled with an enormous citizenship; the continents are crowded full with forms of life innumerable, both above and below their surface line; even the air which enwraps us is alike pregnant with living forms. If you doubt this, listen to the words of an honored searcher into

nature's secrets. "It has been a common objection of Abiogenists that, if the doctrine of biogeny is true, the air must be thick with germs; and they regard this as the height of absurdity. But Nature occasionally is exceedingly unreasonable, and Professor Tyndall has proved that this particular absurdity may nevertheless be a reality. He has demonstrated that ordinary air is no better than a sort of stirabout of excessively minute solid particles."

And all three, earth, air and sea, in the list of their inhabitants, include both the animal and vegetable. Their name is literally legion. Sir John Lubbock, in his address last year before the British Association, said on this point; "As regards descriptive biology, by far the greater number of species now recorded have been named and described within the last half century. Dr. Gunther has been good enough to make a calculation for me. The numbers, of course, are only approximate; but it appears that, while the total number of animals described up to 1831 was not more than 70,000, the number now is, at least, 320,000. Lastly, to show how large a field still remains for exploration, I may add that Mr. Waterhouse estimates that the British Museum alone contains not fewer than 12,000 species of insects which have not yet been described, while our collections do not probably contain anything like one-half of those actually in existence. Further than this, the anatomy and habits even of those which have been described offer an inexhaustible field for research, and it is not going too far to say that there is not a single species which would not amply repay the devotion of a Take the humming-bird. What would be your guess as to the number of its species? Hardly, I imagine, that the number was some 400, yet such is the fact. The number of specimens of the humming bird in the British Museum is 1,500. These figures give some slight hint of the vast wealth of animal life lavished upon this earth.

To this innumerable host add the rank and file of the vegetable

world, the microscopic and invisible as well as the visible; and let your imagination give you a glimpse of what the intellect refuses utterly to grasp—the boundless tides of life ebbing and flowing and pulsating through this world.

I say ebbing and flowing, for all living beings are subject to the laws of birth and death. Every organized being has its inevitable periods of birth, growth, maturity, decline, and death; which we can no more control than we can control the tides. We may build dykes against the tides and in a puny way arrest their overflowing at some little point, but the tide rises just the same, and the tiny barrier we have builded but emphasizes our powerlessness; and we may modify the periods of life in their rise and fall, but they are none the less inevitable.

Now let the law of death reign without its counterpoising, antagonistic law of birth. If you can, in imagination let death go on as usual for one hundred years, with no births in all that time to fill up the ranks. What desolation is on every hand at the end of that fatal century. The few scattered fragments of animal and vegetable life which might possibly survive, would be as a helpless old man lost in the catacombs. A few more years, and the blackened and scarred surface of our earth, become the vast burial-ground of man and mollusk, of tree and flower, would greet its satellite, the moon, in a common dismantlement, a mutual bereavement, a sisterhood of desolation; for life's ebbing tide has done its perfect work, and its retreating waves have left but a blackening ooze with no single individual life upon all its blighted surface to relieve the drear expanse of that all enshrouding pall. How all-powerful, how relentless, how resistless is this out-going tide.

And yet the world of life moves on from year to year undisturbed by any threatened destruction. Its unnumbered species are maintained with no haunting fear of extinction. The dread ebb-tide has met its equal and opposing force; nay, more, has met that flood tide which, possibly, may more than counterbal-

ance its undermining undertow. We have called the ebb-tide death, and when we question nature as to the christening of this flood tide, she whispers that its name shall be called birth. For upon every organism from the lowest to the highest, is laid the imperative duty to increase and multiply; to every organism is given the wonderful prerogative of the reproduction and perpetuation of its species; to every one that patent of nobility which belongs alone to parentage; to every one the benediction which comes alone from children.

The magnitude of the work, the prerogative, thus laid upon the life of each generation, is as vast and inestimable as that life itself, with which it is commensurate. The immense aggregate never appeals to our attention by its own call to us. must seek it out if we would get a hint of its majesty. know, perhaps, that our own household has been gladdened by the coming of a new life into its circle; that the geranium in the window has blossomed; that the robin's nest in the old oak tree is full of a comical mixture of awkwardness and pin-feathers surmounted by enormous mouths; but this no more suggests to us the mighty work of creation's perpetuation than the dew suggests Niagara. The whole world, with wonderful fidelity and devotion and self-sacrifice, is daily taking up the work given it to do in the high honor which the Creator has bestowed upon His created by making them, in turn, in a humble sense, His co-laborers in the work of creation, and the perpetuation of His handiwork.

The great world is busy taking care of its childen. Ancient mythology tells us that Minerva sprang full-formed from the forehead of Jove; but that is mythology and neither history nor fact. In some of the lowest organisms, it is true, the parent is merely sub-divided into two equal and independent organisms, both complete and mature at the moment of the multiplication. But as we ascend in the scale of being, we find that the more generously endowed and delicately organized the species.

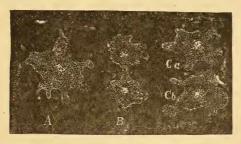
the longer the childhood and the greater the demand upon the parental care and training.

Notice the methods by which the operation of this great function of reproduction in all organized beings, is carried on. First of all we must fix clearly in our minds that what the molecule is to the unorganized body, the cell is, precisely, to the organized being. The molecule is the structural element or unit of the non-living substances which surround us on every hand; and the properties of these various substances, all the properties, depend upon and are found in the molecule, and hence the many observations upon molecular activity of which we hear so constantly. The cell is the structural element or unit of all the living, organized beings, the plants and animals so familiar to us all. This cell is a microscopic body, spherical in its primary form, but so modified by surrounding influences such as pressure, and others which we cannot so easily explain, that it assumes every conceivable shape, such as flat, star-shaped, cylindrical, etc. It consists, generally, of a cell wall which is the outer envelope, and the contents within, which includes the speroidal spot called the nucleus. But it is subject to many modifications. Thus the cell wall may not be demonstrable, there may be more than one nucleus, and the nucleus may contain a secondary body, the nucleolus. But whatever its changes of form, the cell is omnipresent in all tissues. All tissues are built up of these units. We cannot even dry our hands on a towel without rubbing off on that towel some of these cells. And not only are these cells the building material of the tissues. They are the indefatigable workers as well, by means of whose energies the functions of organized bodies are carried on. Without their labor there could be no sustentation, no reproduction, no correlation.

Everything being dependent thus upon cell activity; living cells composing the fabric of which the body is built up; cell labor furnishing the motive power by means of which the body per-

forms all its operations and discharges all its functions; it is at once understood that reproduction is, can be, but an instance of a certain particular well-defined cell activity and cell multiplication, taking place under certain well-known limitations and conditions. In fact the same exact and orderly process as are all of nature's operations. This being true, logical deduction leads us straight to the supposition that, in spite of the apparently various methods of reproduction in the many species of plants and animals, such methods must in reality be few and closely allied. The correctness of this supposition is abundantly borne out by The methods are but three. They are technically the facts. known as reproduction by fission, by gemmation, by ovulation: and we shall presently discover that they might all properly be included in one class, for they are all essentially the same, and are strikingly suggestive of the unity of all nature's works, the singleness of the universal plan.

*What is generation by fission? Why merely this. In the lowest forms of life, where we find the entire organism to consist of a mere speck of protoplasm, and where this single microscopic speck exercises all three of the functions of sustentation, generation and correlation, when the generative function is undertaken it is accomplished by the simple dividing into two



Multiplication among the lowest organisms, the Monera. A, an entire moner (PROTAMEBA); B. the same with signs of subdivision into two parts; CA and CB, two individuals formed by subdivision of the first.

of the speck which before was one. We discover it taking on a sort of hour-glass contraction, which progresses until division

into two parts is complete; these resultant parts, like all good children, acquiring the form and size of the parent and repeating the reproductive process. This method of reproduction is well shown in the accompanying cut, taken from Haeckel.

When, a few years ago, we turned a deaf ear to art, banished the Venus de Medici from our memory, and were swept away in an epidemic craze for the wasp waist and its necessary accompaniment, the corset, the artificial development of the human form divine was ludicrously suggestive of a sudden passion for reproduction by fission. It was certainly favorable to neither of the other methods, to say nothing of the effect upon the general health; and it is well that the fission furore is out of date. May it never gain a resurrection at the hands of that most phenominal vivifyer of the burial robes of the dead past who passes under the nom de plume of a lover of the antique.

Before dismissing the mode of multiplication under consideration it should be noticed that the division of the parent may be into more than two parts; and that it is legitimately entitled reproduction because the resulting parts are capable of giving rise in like manner to other organisms similar to themselves, produced in precisely the same manner in which they themselves were produced, and, in short, exhibit all the attributes of the original protoplasmic speck.

This is reproduction by fission. Reproduction by gemmation differs from that of fission merely in this, that instead of a division into parts by which the parent disappears in its offspring, a small fraction of the parental substance, a bud, becomes detached, which grows to the dimensions and likeness of its parent as do the children of the higher animals, leaving the parent to still carry on its independent existence as before; and whenever you hear a lover of plants and flowers talking of "bulbs," you may know that she is depending upon reproduction by gemmation for the multiplication of her flowers. For propagation by bulbs is an instance of reproduction by gemma-

tion. Fission merges the parent in the children, gemmation leaves the parent intact. The children of fission are orphans by birth, gemmation has its grandfathers.

But the method of reproduction obtaining with a vast majority of those plants and animals with which we are familiar, with which we come into daily contact and constantly see all about us, is that of ovulation. Ovulation is perhaps a strange and formidable word to us; but ovulation is only the word used to designate the processes of the ovum, and ovum is only a Latin word whose English equivalent is egg, a word familiar enough to us all. Thus we see that ovulation means simply egg-ation. It may seem a startling statement to the ordinary reader who has never been a worker in this special department, that both himself and the field of grain which delights his eye, are the magic result of that form of cell activity which produces the egg and carries it to its perfect development; that he is from the egg just as literally as the swallow which builds her nest under the eaves or among the rafters of his barn. Yet it is just as true as startling.

But we must be sure that we know exactly what an egg is. We who have known the measureless childhood delight of scrambling up trees, skinning our knuckles and tearing our clothes that we might get a glimpse of the wonderful blue treasures of the robin's nest; we who know how every care and cloud went out of the world when we started for the great rambling old barn to hunt the nests and capture the eggs; we to whom that barn was a sort of inanimate guardian angel, else we had never felt so satisfied in its companionship nor been freed within its charmed precincts from the ordinary workings of the law of gravitation, but had broken our necks times without number; we who have carried to the house the battered veteran of a straw hat filled with the spoils of the morning's expedition; we who, in later years, in the official seat of pater familias, have read in the

market reports of the morning paper that the grocers have set as high a value on this commodity as do we on the memory of our childish sport, must not let the memory of the past, the grocer's bill of the present, nor the graven image of wood in the stocking basket, mislead us in our conception of an egg. It will not do to define an egg as something with a shell too frail to answer the purposes of a rustic seat, because in boyhood the stern school of experience taught us that our hat was not at all times an equally successful substitute for a hassock. As something with a "yelk" and a "white" which may become intermingled and odoriferous, because our boyhood's pantspocket may have been suddenly transformed into a labratory enveloping sulphuretted hydrogen in a most uncalled-for and reckless manner.

Take a hen's egg and break it upon a plate. Looking at it carelessly, you would say that it consisted of two parts, the white and the yelk. If you will look a little more closely you will see a third something-a little, opaque, whitish spot, contained within the white and near to the yelk. Suppose we call this spot the little yelk. We now recognize three things in the make up of our egg-the white, the big yelk, and the little yelk. The white is a mass of albumen. The big yelk is, in technical language, the nutritive yelk. It is so called because it is nothing more nor less than a store of nutriment laid up to meet the wants of the chick which is to be developed within the shell. This mass of albumen, and nutritive yelk are for the growth of the chick. They provide its food, and the building material from which its earliest frame is to be constructed. For the development of this particular egg into an independent organism, takes place outside of and external to the mother organism, and hence must carry this necessary freight of provision with it. While in those higher animals, the mammals, which retain the ovum or egg within the organism of the mother, there constantly drawing needed supplies for its growth and development directly from her, these adjunctive, nutritive, non-essential parts of the egg are dispensed with. The little yelk, the white spot, is, in technical language, the generative yelk. This little germinal spot has wrapped up in itself the entire significance of the whole egg. It is what determines the egg to be an egg. The other parts may be wanting; this, never. They are non-essentials; this, essential. They meet the peculiar conditions imposed upon a certain class of eggs; this is the one essential factor without which no egg can be an egg anywhere in the vegetable or animal world. Here, and here only, is to be found that peculiar cell activity and condition which can start the train of development which leads to a complete and perfect organism. Here is the vital spark. We wonder at its minuteness; and yet when we remember the cell to be the basis of all organized being, we are led away from that mistaken habit of mind which only recognizes "bigness based on quantity."

The human ovum is a mere corpuscle, a nucleated cell; invisible to the eye, it being only from one one-hundredth to one eight thousandth of an inch in diameter; and having no investing shell, there being no need for the presence of any such protective wall. Upon this little cell, then, depends the march of humanity through the centuries. It is this cell, this ovulum, which is the casket holding the promise of the coming man. It is this cell that is potent with the highest creative power. The possibilities wrapped up in this minute cell, this microscopic human egg, make it a far more portentious epitome of life than the huge egg of the ostrich with its heavy freight of nutriment and shell. The import of the egg is centered in its germinal spot, not in the supply of food stored up to meet its earliest necessities. For the discovery of these eggs which are without shell, without large nutrient stores, which are developed within the organism instead of without, this mammalian ovum, we are indebted to Carl Ernst von Baer, German by birth, Russian by adoption.

Notice the similarity existing between the three methods of reproduction. Taking reproduction by fission as the type, we find that it is often difficult to draw the line between this method and gemmation. A single cell may be detached from the parent mass and develop into a complete organism of its species, in such a manner as to make it a matter of extreme difficulty to determine whether it belongs most to fission or gemmation; the original distinction depending more upon relative mass than anything else. In ovulation we find the first sign that the egg is to develop into an organism, and not remain an egg subject to a retrograde metamorphosis, to be the segmentation of its substance, the running of division lines and boundaries through its minute mass, its subdivision into a number of smaller cells. It goes without saying that this primary process of ovulation points us back to the primary method by fission, for the very meaning of that term is cleavage. The distinction to be noted here is that the decision of the fate of the ovum, whether it go forward to complete development into an independent organism, or suffer disintegration, hinges upon its contact, or failure of contact with the male element. Here, then, we must enlarge our field of vision sufficiently to include another salient point. Namely this. That as we pass from the lower organisms, where the same infinitesimal portion of protoplasm may assume all three of the functions of life-nutritive, generative and motive-to the higher, where separate organs are set apart for these several offices, reproductive organs begin to make their appearance, and finally become so complicated that the apparatus is divided and half given to one individual and half to another, thus creating the distinctions of male and female. So that the concurrent action of two individuals of the species, male and female, becomes necessary for the production of a new being.

To return to our study of resemblances. Gemmation means budding, and the analogy between the bud and the ovum is very close. Professor Cleland well says that "if the bud happen

to be only a single nucleated corpuscle devoted to reproduction, separated from a large mass of such corpuscles or from an organism however complex, yet it is plain that it may be none the less fairly considered as a bud or germ from the whole organism. Now that is precisely what an ovum essentially is; but an ovum, whether animal or vegetable, has the peculiarity that it will not develop into a new individual unless there be incorporated with it another germ of dissimilar kind, though derived from the same species of organism, and herein consists the essence of sexual reproduction (Gamogenesis)." In short, the entire range of reproduction throughout the entire world of plant life and animal life, affords but three methods for the perpetuation of species. Nature's great facts admit no farther subdivision. To admit these three is an almost undue refinement. They form a trinity which is in essence one. Dr. Wilder remarks: "Notwithstanding many exceptions, it appears that, upon the whole, as we ascend in the scale of organization, the processes become more and more complex. But even in the highest stage there is really only a modification of the simple division which occurs in the lowest; for ovum and zo-osperm are merely internal offshoots, minute though they often are, from a parent stock. And it might be shown how gradual is the transition between the reproductive processes of the two extremes of animal life, the moner and the man. For the differences relate to the proportion between the stock and the bud, to the complexity of the organs and processes required for elaborating the zo-osperms and the ovum, for effecting their contact, and for protecting and nourishing the latter during its development into a new individual."

We have seen something of the immensity of the work of reproduction; something of the number of species and variety of forms which its instrumentality perpetuates upon our earth; something of the methods by which this multiplication is accomplished; something of the resemblances between these

methods which identify each with each and make all one. Seeing these things has been as if we were being shown the plan of the King's gardens, -and the King's gardens are so very wonderful and so very beautiful. We have been inconsistent with ourselves so long; have celebrated birthdays with shouts, and spoken of birth in shamed whispers; have made the child the symbol of all that is innocent and pure, and then asserted vehemently that the doctor brought him; have paid unstinted homage to woman, in public as well as private, and suppressed the mention of her matchless crown; that it is most restful to recognize the divine plan, and feel that in this, as with all studies of the omnipotent designs, we are ennobled by the knowledge imparted. That what we had feared and shunned as containing only possibilities of temptation, proves to be a strong arm for our uplifting. How fascinating is it to observe the decorations of honor bestowed upon this function. "Behold what pomp, what joys, what glory, and what magnificence, are prepared by nature for the marriages of plants and animals! How the lion and bull pride themselves on their strength, the antelope on his figure, the peacock and swan on their plumage, the fish on its silvery coat, and on the splendor of the golden and brilliant appearance of its body. How the butterfly expands its diamond wings, how the flower displays its charms to the rays of Aurora, enjoys in silence and drinks the pearly drops of the dew. All is the radiance of beauty in nature; the earth, covered with verdure, resounds with accents of joy and sighs of pleasure; all exhale love, all search for it and enjoy it—in a word, it is the common festival of beings." *

The flowers; what other adornment has mother earth to compare with them. We persuade them to blossom in the yard; to bloom in the windows of our home; we shower them upon our sons and daughters as from commencement platforms they take the leap into life's restless current; we twine them in the

^{*}Julien Joseph Virey. (Ryan).

hair of the newly-crowned bride; we bear them to the stricken pillow of the sick; with tear-dimmed eyes we strew them upon the casket which holds the precious, perished ashes; we love them that they grow so trustfully upon the grassy mound. Did you ever stop to think that a flower's work is resurrection? That the flower is the reproductive apparatus of the plant, fitly adorned for its high office? Yet so it is. Ah! how beautifully and tenderly the great Father over all has spoken to his children down through all the ages by his flowers, that they must never forget the sacredness and purity and fragrance of parentage. Genial Dr. Holcombe of New Orleans remarks: sexuality of plants is so apparent that they have been divided into phanerogamic and cryptogamic, or plants with open marriages and plants with concealed or not clearly discoverable marriages. In some forms of the vegetable kingdom the sexes are as distinct to view as in animals; and their interchanges of love are wafted to and fro by the feet and wings of insects and the whispering currents of the concerting winds. When a bee has gathered honey from a male flower, he will alight the next time only on the female flower of the same species, where he shakes from his body the golden dust which impregnates the receptive plant with the aromal life of her distant lover."

The stamens and pistils are the essential portions of the reproductive apparatus, the former being the male organs, the latter the female. The stamens produce a powder-like substance called pollen, familiar to us all, which fertilizes the ovules, or rudimentary seeds found in the ovary of the pistils; and thus is produced a perfect seed capable of development into a perfect plant. Just how the pollen gains access to and influences the embryo cell in this all-important manner we do not know. We are wholly ignorant of the nature of the influence exerted by the male element upon the female in the case of both plants and animals. All we can affirm is that it is the union of the two protoplasmic masses; which, with many

plants and lower animals, are the product of different parts of the same individual; but in other plants and animals, including the human species, they are always developed in their respective male and female organisms, and reproduction can be accomplished only by the concurrent action of two individuals.

It is not a little remarkable that these two minute protoplasmic masses should in themselves contain the qualities of organism, of mind, and of general resemblance, which go to make up the hereditary stamp of the future individual. mental and physical characteristics are inevitably hereditary in their nature; although, as Dr. Flint says, "no definite rule can be laid down with regard to the transmission of mental or physical peculiarities to offspring. Sometimes the progeny assumes more the character of the male than of the female parent, and sometimes the reverse is the case, without any reference to the sex of the child; sometimes there appears to be no such relation; and occasionally we note peculiarities derived apparently from grandparents. This is true with regard to pathological as well as physiological peculiarities, as in inherited tendencies to certain diseases, malformations, etc." As to the mother's qualities, it may be urged that the new organism develops for months within her own, and that this would sufficiently explain any stamping of her own qualities upon the offspring. Without stopping to discuss the soundness of this view, we notice that the father plays as important a part in and makes as large contribution to the hereditary make-up of the child as the mother; and if these transmitted qualities of the father are not wrapped up in the original protoplasmic bestowment of the male element, it is difficult to see in what manner they become engrafted upon the new organism. "No exception is, at this time, known to the general law, established upon an immense multitude of direct observations, that every living thing is evolved from a particle of matter in which no trace of the distinctive characters of the adult form of that living thing is discernible." (Darwin.) The devices of nature to protect and care for the seeds of plants, those unborn babes of the vegetable world, which are cast off from the parent and left to shift for themselves, are marvelous and multitudinous. A single instance must suffice. Mr. Warder of Ohio has discovered how this care is manifested in the case of water-lilies. Their seeds are heavier than water, and if allowed to fall out and sink to the bottom, their new life would have to contend with that of the older and stronger plants. To meet this emergency we find them provided with a cellular substance called an arillus, which swells and becomes filled with air, so that when they are projected upon the water each one finds itself with its life-preserver on and in proper position, by means of which it may make a long journey, terminated only when the air is expelled or the substance decays, when it gains a final resting place at the bottom.

It may be objected that while plant reproduction offers a close and pleasing analogy to reproduction in man, yet still the beauty inwrought with the flower finds no counterpart in the case of the human species. I would not ignore the position of the reproductive apparatus as placed in the human body. Possibly it may have been so placed in contiguity to vessels which we consider the less honorable that we might be led away from an undue dwelling upon the mere pleasures and mechanism of the function, to the greater contemplation of the higher and truer significance of generation in its bestowment upon us of the honors and responsibilities of parentage. However this may be, we are still without excuse if we fall into the too common mistake of looking on this apparatus as an unclean thing. To it belongs none of the more humble offices of digestion and nutrition. For its support the system tenders the life current that it may have its energies all conserved for the one great work given it to do. Its surfaces are lined with a pure and wonderfully organized mucous membrane, the delicacy and complexity of which put to shame that of the lip. We must

confess that the honored mouth, which gives utterance to the thoughts of the mind, upon whose gateways the light of the inner life is constantly playing in reflected expression, is compelled to do duty also as the receiver and masticator of food, which is a comparatively humble office. To this work is it due that the mouth does not cleanse itself perfectly—we must cleanse it; while those precincts which are the birthplace of life are emancipated from the entrance of anything that defileth, and this earliest cradle knows not even the fear of slightest contamination, and the couch of life's tiniest beginning is snowy white in its unstained spotlessness.

Though in the flower the stamens and pistils are often very beautiful, yet it is not in these, the essential sexual organs, that the chief beauty lies, but in those surrounding petals which our botanical friends call the corolla. And I submit that from Linnæus down, no botanist has ever been able to show us any corolla to compare with the human form divine. No stamen or pistil ever had such peerless adorning as is the human form and feature. I do not speak now of the Adonis side of the question. No one has ever denied the surpassing beauty of the most perfect manly development in the pride of its splendid strength. No traitor from his own ranks, and no insidious enemy from the other camp has ever whispered in his ear the poisoned thought that the exercise of the procreative duty, the high creative privilege, was not one of the noblest exercises of his truest manliness; something vouchsafed to him as a high prerogative by the very attainment of that same manhood. No, it has never occured to him to doubt it, and no enemy has ever hoped to make him believe it, and no discussion is called for here. But it is high time that some champion with lance in rest should espouse the cause of the true temple of Venus, which has suffered great desecration at the hands of this age and nation. Not that woman should be made a mere embodiment of the reproductive function, and nothing else, any more than we

should so set down the man. But let it be fearlessly asserted that motherhood is woman's royal diadem. I care not how many other crowns you give her, none will ever approach this in splendor; no other title can convey a tithe of its nobility. For this reason, including the lesser in the greater, it is right and proper to claim for motherhood that beauty of form, of feature, of mind, and of soul, which have been alike sung by poet, sworn by knight, and testified by all ever since the morning stars sang together, and evening's softening twilight brought clear vision unto earth-dimmed sight. "Woman's rights." Ah yes, may she have them all, have them all now. May any that are withheld be delivered to her now and immediately. But how strange is it that woman's bitterest enemies, her most insidious foes, many of them foes of her own household, should make woman's rights the stop-thief cry under cover of which they seek to rob her of her highest honor, cast her down from her most uplifted throne, drive her from her most resplendent and sacred temple, question the dignity of motherhood. With such I can have no patience. The forbearance all belongs with those who have joined the cry without perceiving the sinister motive; and they are now so large a majority that the "movement" has been redeemed. But the really guilty deserve the severest censure. For as upon the mother falls the greater share in the parental work, so is her honor proportionately great.

Ah, these mothers of ours! Will a stupid world never realize their omnipotent power and blessing and benediction. They alone welcome us to this earth to which we come as absolute strangers. And as we grow into childhood's joys and childhood's sorrows and childhood's fears, she is the one impregnable bulwark between us and all the vicissitudes of the outer world; her breast a breastwork of protection for us such as is never found elsewhere or afterward; affording us perfect security from the rude strife and contention which belong to the pitiless march of life to and fro in the world about us.

But the years glide by. Happy, happy years, which pass all too quickly and never come again; and the day is drawing nearer when we must leave the rampart so tried and true and launch our frail bark upon the hurrying, restless tide of this world's life. We have set the day weeks beforehand. Somehow we had thought it would be a grand day for us, yet every little while when we come in unexpectedly mother's eyes are full of tears, and we wonder, and begin to doubt our own estimate of this great day,—but no, she blesses us even through her tears. and mother always knew what was best, so it must be all right, and we put away the questioning. But at last the trunk is packed. We had meant to pack it ourselves, for it would be in some sort an assertion of our new-found independence to pack our own trunk as we started off. But by some means which we did not notice at the time, it happened that she packed it after all. Probably it was because she was so vigilant to see that there was no button off any of the shirts, or in danger of coming off; that there was a good supply of handkerchiefs; that there should be two new night-shirts lest the others should give out sooner than expected; that there were no thin places in any of the stockings; because she knew just where everything was and so could pack the trunk better than we. And then too, we afterward kept finding little things in various nooks and corners which she had put there to surprise us. But never mind, be that as it may, she packed the trunk.

I wonder how it happened that mother didn't eat any breakfast that morning. Boys don't often notice such things, so she must have eaten very little indeed for we boys noticed it. And then too at family worship that morning as we sing "My Days Are Gliding Swiftly By," we notice that mother's voice trembles, and we look up quickly, but she is not looking at us and she must be thinking about something else. Then the old stage-coach rumbles up to the front gate, and of course the driver is in a hurry and we must hasten to be gone. The trunk

is carried out, and the valise; but there is mother with two or three parcels which we don't know anything about. She tells us the big one is our lunch which she is sure we shall need, and we wonder why she should think that we needed about ten times as much to eat as we should if at home, -and the other bundles are some "last things" she says. We don't like to take them, for there are some other people in the stage, and we don't want them to think that we have to be taken care of just like children. But she says that they are things which we shall need, and we are not quite graceless enough, just then, to argue the matter. For somehow it has just begun to come over us that this going away isn't quite so glorious as we thought it was going to be. At any rate there is something else all mixed up with the glorious in the queerest sort of fashion. But the driver is impatient to be off; and mother's arms are about our boyish necks for just a moment, and the sacred baptism of her tears is upon our heads, - and the stage has started off down the road and taken us with it. We sit very straight and stiff, and try to see out of the corners of our eyes if the other passengers are looking at us. And now we have reached the turn, and must get the last glimpse now or not at all. And all at once we forget to care what the other passengers may think, and lean far out of the stage. There is the old home just going out of sight; and in front of the open gate stands mother, waving her white handkerchief. The stage sways as it rounds the turn, and home and mother are lost to sight. Ah, that white fluttering handkerchief; flag of a mother's love and prayers and tears; flag of the world's hope. The black flag of the Sultan is but an impotent rag compared with that all-powerful flag of love and memory. Flag that is never furled; flag that floats alike through storm and calm, through tempest and sunshine; ever urging us onward to the highest purpose, the noblest endeavor, the truest work, the most unfaltering faith and trust. Flag of motherhood we salute you. Not with noise

of powder and cannon, not with the honors that are paid to earthly governments; but with that homage which is deeper than the heart, that love which is stronger than the heart. Flag that is mistress of the world; motherhood divine!

The eminent French physiologist, Claude Bernard, has said some very interesting things about the connecting links between the functions of reproduction and nutrition, for the translation of which I am indebted to Dr. Wilder, in an appendix to his work. Bernard says:

"All the phenomena of living beings have a common origin, the cell. The cell and the ovum are constructed upon the same type. The egg divides, segments and produces an infinite number of cells. The phenomena of prolification are at their greatest activity in the embryo. We shall show that cellular multiplication also exists and continues in the adult.

"The researches of Schleiden upon the vegetable tissues, those of Schwann upon animal anatomy have been the basis of the present ideas respecting the cellular elements and their office in the development of tissues. There is a period of embryonic life when the new being is made up only of cells called the embryonic cells, namely, at the moment of the formation of the blastoderm. At a later period the cells differentiate and thus provide for the production of the various anatomical elements. The organism composed of cells is sustained only by their constant renewal. These cells develop themselves so as to produce the different organs. We shall say a few words upon the laws which govern their development.

"When we examine the primitive cell, the egg, we see, after fecundation, that it segments and gives rise to elements like itself. These primary cells which result from the division of the egg are the embryonic cells. All the organs pass through this state. With an embryo already formed, that is to say, when the trunk, the limbs and the main outlines are recognizable, the muscles, the liver, the kidneys, are distinct as to form; but, if

we take these organs and examine their structure we find that it is identical in all; they are all composed of embryonic cells. The form of the organs preceds the details of their structure.

"Thus every tissue begins by being formed of embryonic cells, and is organized by the transformation of these primitive elements. But how then does this embryonic cell give rise, one after another, to the different tissues?

"According to a theory adopted in Germany, one cell can transform itself into another, one tissue into another tissue, a cartilage cell into a bone cell.

"The works of H. Muller and Ranvier upon the development of bone have shown, on the contrary, that neither the cells nor the tissues are capable of being transformed directly into other tissues or cells. It is not the same element which passes directly from the first form into the second; there has been an intermediate evolution. When a cartilage is about to ossify, the cartilage cell is destroyed, disappears, and returns to the embryonic condition, and it is from this last that it becomes a bone cell. This law applies to all cases of this kind to such an extent that we may say that the phenomena of regeneration take place by a return to the embryonic condition which always marks the commencement of repair or of metamorphosis of tissue.

"These phenomena occur by virtue of two principal conditions, one being the autonomy of the elements, the other the influence of the region in which they live and are evolved. We have been accustomed to over-estimate the importance of the first of these conditions, and to underrate the second. We have had a wrong idea respecting the autonomy of the elements, which has been declared to be entire and absolute. The different cells of the body of an animal are not absolutely independent elements; sprung from a single cell, the egg, which has imparted to them a particular nutritive and reproductive property, they bear the stamp of this common origin which forms a bond of union between them; they are always subject to the influence of this

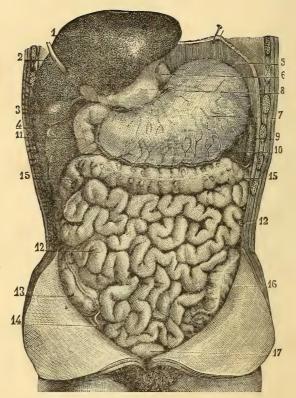
prior state, which explains and affects their actual evolution. Undoubtedly they have a certain activity of their own; each has special conditions of life, of death, of reactions and of poisoning. But this independence has its limits; it stops at the point where elements tend to become distinct organisms.

"The experiments upon which we base the idea of autonomy are very remarkable; especially those relating to the development of osseous tissue. The works of Duhamel and of Flourens have taught us that bone is formed at the expense of the inner layer of periosteum. We know that this is through a progressive and retrogressive evolution of embryonic cells which exist under the periosteal membrane; but it is through the experiments of Ollier that the autonomy of these elements has been most clearly exhibited. Taking a bit of periosteal membrane retaining its inner layer of young, newly-formed cells, M. Ollier transplanted it to a region where no bone existed, under the skin of the back. The fragment of periosteum developed, ossified, and gave rise to an osseous formation. These elements have then a life of their own, to a certain extent independent of the medium in which they are.

"Yet that conclusion is not rigorously correct. The studies upon the same subject have led to the conclusion that the influence of the region has no less an effect upon the development and final condition of the tissues. This second part of the demonstration is due to various experiments, and particularly to those of Philippeaux. Repeating the experiments of Ollier, Philippeaux has shown that if the observation be continued for a longer time the new bone, formed from transplanted periosteum, gradually disappears, is reabsorbed, and that in its place is found only the proper tissue of that region. In that second phase of the experiment, the activity peculiar to the elements has given way to the influence of the region.

"There is another experiment due to Ranvier, and which we must interpret in the same sense. Taking a very young anima,





Stomach, liver, small intestine, etc. (Sappey.)

inferior surface of the liver; 2, round ligament of the liver; 3, gall-bladder; 4, superior surface of
the right lobe of the liver; 5, diaphram; 6, lower portion of the œsophagus; 7, stomach; 8, gastrohepatic omentum; 9, spleen; 10, gastro-splenic omentum; 11, duodenum; 12, 12, small intestine; 13;
cœeum; 14, appendix vermiformis; 15, 15, transverse colon; 16, sigmold flexure of the colon; 17, urinnry bladder.

Ranvier removed a metatarsal bone and grafted it upon the skin of the back. The little bone grew at first, but did not fail afterward to undergo the phenomena of retrogression, and in its place was to be found only the tissue of that region. Meantime, in the place of the removed metatarsal a new bone had apppeared.

"Certain organs manifest in their functions oscillations of greater or less extent, in the intervals of which they atrophy and seem to diminish. We have already mentioned the continual shedding of epithelium. Goodsir admitted that each digestion is attended by a loss and renewal of intestinal epithelium. In the trachea, (windpipe), there is an analogous process under certain pathological conditions. Hunter has shown that in the sparrow the generative organs, ovary and testis, atrophy and diminish until the time when their functions are again called into action. Stannius has made a similar observation with certain batrachians. More than this, these phenomena of retrogression and repair extend to the nerves and nervous ganglia attached to these organs. In all these cases the repair is accomplished by a mechanism analogous to that of the development of the embryo.

"Certain instances of loss and regeneration are even more complete. Among the lower animals a limb, a part of the body, even half of the animal may be replaced at the expense of the remaining parts. Thus a planaria cut in two, forms two planariæ like the first; it is a sort of artificial fissiparity. The anterior half adds to itself a posterior half, and the posterior half forms an anterior half. But the two planariæ created in this manner, taken together, only make up the same bulk as the original animal.

"If, then, we continue the subdivision there will come a time when reconstruction is no longer possible unless we wait until the animal has had time to acquire its normal size. It is necessary to understand also that the newly developed portion is not a mere bud of the pre-existing fragment, but this latter is used as a whole to form a new planaria.

"With some reptiles, as the lizards, a part may be replaced after destruction. The tail of a lizard, if cut off, is reproduced. By weighing the animal before the experiment and after the restoration of the part, we find that it is at the expense of the proper substance that the injured part is repaired. Duges even obtained a still more curious result from the following experiment. He cut the tail half through at the base. It remained adherent, and in the wound a second was developed. The lizard, after cicatrization, had two tails. With the crustacea a limb removed is replaced by another; the latter is formed under the carapace, and only increases at the time this is shed.

"This repair of lost parts, among the lower animals, has suggested a question, the solution of which by experiment will have the highest interest. Can a limb removed in its totality be replaced by another? Philippeaux, making his experiments upon the salamander, has noted that when the whole limb, together with the shoulder, is removed, no renewal takes place. This would indicate that the limb may be a sort of unity in itself, and that the part left attached to the animal acts as a germ whence proceeds the new limb.

"On the other hand, Legros has performed experiments in which, having removed the entire stump, including the shoulder, with the greatest care, he has nevertheless, as he states, obtained a regeneration. If there is no error in the mode of operating, there may be some condition sufficient to account for the contradictory results. It would be necessary to ascertain, for instance, whether, according to the age of the animal, the limb can reproduce itself or not when removed completely, as we would be authorized to think from analogous facts.

"We have already had occasion to cite the experiments of

M. de Sinety upon the ablation of the mammary gland with Guinea-pigs. This operation had been at first performed upon adult females, with the purpose of learning whether, at the time of parturition, the organ would be reproduced. Nothing of the kind took place, and the young died of hunger, parturition having gone on as usual. Repeating the experiments upon very young individuals, M. de Sinety found the gland reproduced; and in one case a new nipple was perfectly formed. It might still be objected that with young animals the gland could not be properly said to exist as yet; that possibly there had been removed only the tissue which ought to produce it, and that embryonic cells which escaped removal had served as the point of departure for the regeneration of the organ. The results are none the less remarkable.

"With the higher animals, other tissues, and even the most specialized, the nerves, for example, are still capable of regeneration. We have no intention of entering into the details of all these phenomena; we wish only to show that regeneration takes place always by the same process, through the medium of an embryonic tissue. If we cut the sciatic nerve of an animal, there results in the corresponding limb a loss of function, paralysis of sensibility and of motion. After a time, varying according to the species, we find that the properties of the nerve are restored; we must then admit that the organ is re-established. M. Ranvier has studied with great care all the anatomical phenomena of the degeneration and regeneration of nerves, applying to that study the new light resulting from his investigations upon the structure of the nerves. M. Ranvier has found that the nerve tube is not an anatomical unit. Of the three parts which compose a nerve fibre, the sheath of Schwann (commonly known as neurilemma), the envelope of myeline (commonly known as the white substance of Schwann), and the axis-cylinder, one only is continuous throughout the entire nerve; this is the axiscylinder. The other two are interrupted at intervals by constrictions. They are segments placed end to end, each having a nucleus, and comporting themselves like cellular elements. After the section of the nerve, the peripheral portion degenerates; the myeline becomes opaque and granular. The nuclei of the segments multiply, the axis cylinder disappears. Then, after a certain time, a work of regeneration commences, starting from the central portion, and the segments of the nerve fibre are reconstructed.

"Now these segments have a certain length, about one millimetre in the adult, but varying in young animals according to their stage of development. If, then, we examine these segments in a nerve in process of reconstruction, we find that they become longer and longer, and that these variations in length correspond precisely with those which we observe in the foetus during development. In short, the regeneration of nerves is accomplished in the same way as is that of the tissues which we have studied, by the embryonic processes.

"This general law establishes a new bond of union between the evolutional phenomena which constitute reproduction and those which belong to nutrition, properly so-called, for redintegration and regeneration may thus be regarded as intermediate

between reproduction and nutrition."

1.5

ANATOMY AND PHYSIOLGY.

The science of anatomy depends upon our ability to see. And the ability to see is not by any means a mere question of evesight. An oculist may pronounce our eyes perfect, and yet we may be so ignorant of real seeing, that it would be ludicrous were it not so pitiful. It is true, we must have eyes, and in following out the structure of our own bodies into its minuter details, we must invent microscopes to carry our eyes into the innermost recesses. But a musket and a cartridge are not the war of the Revolution. The possession of eyes is not seeing. We go out into the woods in June, and think we are enchanted with the new, fresh, sweet-scented life which has awakened on every hand. Yet how many of us ever see a leaf; A leaf is a leaf to us, and that is all. It makes little difference whether it be oak, or maple, or poplar, or birch. The chances are that we have never really seen the individuality of size and shape and thickness; or the delicate veins; or the difference in texture and color of the two sides, and asked the reason why. wild flowers have blossomed thick about us on every hand, yet we refuse to see the calyx and corolla, the stamens and pistils, the cotyledons and plumules, but insist that some one else, who is not blind like us, shall see them for us and write it down on paper, where we may read it. Only at second-hand will we consent to see; and turn ourselves away from the living, breathing woodland, teeming on every hand with life vegetable and life animal, to seek the lifeless printed page. The real faculty of vision lies back of the eyeball. Images thrown upon the retina are transformed into impressions which travel back over

the optic nerve to certain cells of the brain which can take cognizance of them, and so we see. Most of us are content to cut this nerve of communication, and let all the useful and beautiful things of the great world about us fall on a half-insensible retina, while the brain heedlessly slumbers on. Real seeing, seeing fit to be called such, involves both sight and insight. will be a coronal day for our schools of learning when they shall come into the possession of the truth that education can have no greater aim than the giving of sight to the blind. "Up to the day when I took my diploma, there had been, I may say, nothing in my education that required me to use my eyes or any of my senses or perceptions for any purpose, save to read the printed page. I had been taught no knowledge, and no means of acquiring knowledge, except from books. Of knowledge-at first hand-of observation through the senses of the myriad activities and beauties which make up this divine world, I had learned absolutely nothing. When in the junior year we came at last to make some acquaintance with nature's workings, we were totally unversed in the use of our faculties except through books-so we were introduced to Nature herself through books alone—that is, at second-hand. We were taught a little chemistry, but in such fashion that we never handled a chemical substance, or saw one save at a distance, in the recitation-room. We were taught a little geology-but with no more personal acquaintance with the rocks than could be gathered from one or two afternoon strolls with an instructor. We studied astronomy for two terms without once being called upon to look at the stars. Of the growth of the grass blade and the tree—of the processes and laws of our own bodies not a jot or a tittle was given in the preparatory or collegiate course.

"Worse than all these specific defects, the whole habit of personal observation of the phenomena and processes of the material world—that material world through whose forms the

spiritual world discloses itself to man-was left out of our education entirely. And that omission for myself I unspeakably lament. History and literature I can to some extent pick up as I go along. I can hobble on my way though unequipped with German or French. But I never shall get that intelligent, systematic, working knowledge of my physical environments, for which the aptitude and instinct might have been easily gained when I was fourteen or sixteen-when I was buried in Greek paradigms, stumbling through bouleuo and the uses of the subjunctive. And as I walk among the wonders of nature, moved by their beauty, but ignorant of their interior processes—ignorant of how the leaf germinates and ripens and falls, vaguely guessing at the story of the immortal past written in this river valley and its mountain portals-in my mingled wonder and ignorance I am like a child untaught to read, wandering through the library—he admires the pictures, but the text is meaningless to him. In my youth I was given indeed some of the keys to the richest literature, but of things I never learned the alphabet. I acquired no use of my perceptions save with my eyes to read the written page and with my ears to hear my instructor's voice." *

In the study of anatomy we should not depend altogether upon the printed page which records what others have seen. For although the inner mechanism of the human body can be seen only in schools of special training, the dissecting room does not, by any means, hold within itself all the possibilities of knowledge in this direction. There are three anatomies. Standing first in logical order, and, as history shows us, first also to be apprehended by man, we have the anatomy of ocular inspection. It assumes not the daring desecration of the knife, but views the structure in its perfect and completed whole, with no thought of separating part from part, just as it might view the completed Cologne cathedral, feeling that any hand raised to lift inquiringly

^{*}Geo. S. Merriam at the Yale Alumni Meeeting.

the slightest finial, was a wanton hand. It sees the commanding head, the swelling chest, the sensitive loin, the extremities with their knotted power, the whole in its undivided, unbroken symmetry. All this, and much more, may we possess ourselves of, without the aid of book or teacher, if we have learned how to see. Art arrived at perfection in this department of anatomy many centuries ago. It was inevitable that such should be the fact. For art is but the science of sight; and in the study of the material world, sight must be first, and the obvious must come before the obscure.

Next in order is the anatomy of the knife. It reveals to us the muscle, and its sinewy grip upon the bony framework; the arteries and veins in their accompaniment of each other to every corner of the organism, carrying food to the tissues, and bringing away the chips which tell the story of that tissue's work, for every honest workman is known by his chips; the nerves whose delicate threads carry the messages of sensation, and of command to action, back and forth over its perfect system of telegraphy with tireless activity and never-failing accuracy.

And there is one more anatomy. We bring in the microscope, and find that the workmanship displayed in the building of this body of ours, surpasses the test of the most skillful artizanship. For the microscope detects no crudity, but finds itself unable to follow to the end that piece of workmanship which grows ever greater under increasing minuteness of scrutiny.

Each of these three anatomies is wonderful in itself. Galen could have known nothing of the witchery of the microscope, when he said that the anatomy of the human body was a sublime hymn in honor of the Deity. Valsalva had not as yet spent those sixteen ripe, devoted years in unravelling the mysteries of the human ear. But though Galen did not have the light of these later days, he caught the inspiration of the discoveries to come, no less than, with a wonderfully seeing eye, he pushed his own investigations in this direction far beyond the

attainment of his age. And we can but echo his sentiment; and with our knowledge of the beauty of the finished work, the mechanics and economics of its interior processes, the amazing greatness of its microscopic detail, send it back to him across the centuries with all the added emphasis of the knowledge of to-day.

It is told of an eminent divine, that when, bowed with grief, he followed his son to the grave, he exclaimed to the bearers, "Young men, tread carefully, for you bear the Temple of the Living God!" Magnificent temple; but greater the immortal spirit which had deserted it. That to us should be entrusted the erection of new temples, and the inauguration of new lives—does it not seem a very great honor? Having received such notable preferment, it becomes us to carry ourselves in such manner as may not belittle or disgrace our high station. There is no more painful lack in character ever exhibited, than that depraved, poverty-stricken quality of mind which has no respect to pay to that which is entitled to homage, and no appreciation of the sanctity of that which is truly sacred.

For the accomplishing of this function of reproduction, there has been set apart a portion of our organism. It is given us solely for this purpose. It is dedicated exclusively to this one great office. It is called upon to perform no other duty. It is true that the urine is discharged through the urethra, but that is merely an accident of position; and when the apparatus is most actively engaged in its legitimate work, communication with the bladder is shut off altogether. As has been well said, the urinary function of the penis is purely secondary.

We have already seen how the original wrapping up together of matter and life takes place in the protoplasmic speck, the cell. With this in mind we might almost anticipate the statement that in reproduction, when a new life is called into being, its very first beginning is found to be in the form of a minute protoplasmic mass. This being the case, it follows logically,

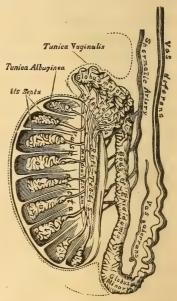
and is the fact as well, that this rare physical mechanism which enables us to exercise the privilege conferred upon us, is devoted to the production of this potent protoplasmic substance, and its deposit where, in conjunction with the ovum, it may grow into a fully formed, new individual. The means employed, and the methods by which the generative system accomplishes its work, constitute a fascinating study. fascinating in the best sense of that word. As fascinating and as uplifting as we should expect the study of a pivotal point in the science of life to be. Not that we would indulge in any mushiness. One of the most healthful and honest mental traits with which we are endowed, is that repugnance which we feel toward all so-called "soft" people. You and I don't like those individuals who are so lacking in all true fibre, that no matter in what capacity we come in contact with them, we can run our fingers right into them anywhere, precisely as we used sometimes to run them into a rotten apple when we had gone to the barrel in the dark. You and I don't admire any such jellyfish masquerading as men and women, and I am very thankful that we don't. I very well know that just that apparatus and function which we have called honorable, has been the subject of every low jest, the outraged object of every witless profanation, the jeer of the degraded everywhere. But I also know that the more sacred a thing may be, the more capable it becomes of suffering violence at the hands of the vulgar, the profane, the degraded. That the most spotless is the most attractive target for those vandals who would besmirch and despoil. The simple confession that this is true, is vindication complete of the subject in hand. The possession of a manly vigor which is capable of giving new life to a coming generation, out of its own abundant fulness, is a grand possession. Every physician knows that no man has a more painful sense of loss of estate, than he whom accident of devolopment, or disease, has bereft of this function. But to return to our study.

We find that the male reproductive organs are partly without, and partly within, the cavity of the pelvis. Or, if we overlook the purely technical distinction made between the cavity of the pelvis and the cavity of the abdomen, we may speak of these organs as being partly inside, and partly outside of the abdo-This double position is specially noticeable with regard Within the scrotum are the to the scrotum and its contents. two glands known as the testes. They are thus suspended outside of the abdomen, while their ducts, which bear away the product of their work, pass inside. It is hard to understand why these delicate, exquisite glands were not given a place within the abdomen, with the greater protection which this would imply. One would think that room might have been made for them there. The abdomen is a marvel of close packing, and adaptation to circumstances. Go into the dissecting room, and remove the contents of the abdominal cavity, and you will be unable to get them back. You cannot crowd them into the same space from which you just took them. You are not as good a packer as Dame Nature. And yet, to what fluctuations are the contents of the abdomen subject. The stomach may contain a New England Thanksgiving dinner, or be nothing but a collapsed membrane; the intestines may be filled with the products of digestion, or with gas, or with both, or be nothing but empty and flaccid tubes; the rectum may be occupied or vacant; the bladder may contain a pint at an ordinary filling, or be merely a folded sack; while the diaphragm is encroaching from above with every respiration. It would seem that so accommodating a cavity could find room for these delicate glands. But they are denied this shelter, and suspended in their sac, without. Still, whatever the motive for the position assigned them, they are by no means neglected, but are royally cared for in their exposed situation. The sac of integument, called the scrotum, within which they are suspended, is given a power of contraction and expansion, by means of which an

adaptability to changes in temperature is obtained. Its cavity is double, and each testis is wrapped up by itself in its various tunics, with a nicety which puts to shame the soft wrappings of the jeweller about some rare piece of his handiwork.

Within these coverings we find the gland itself. Its weight is rather less than one ounce. The tunica albuginea forms its

outer wall, being a white fibrous tissue, dense, inelastic, and about one twenty-fifth of an inch in thick-From the inner surface of this investing membrane, numerous prolongations of its tissue pass into the substance of the gland, forming a system of internal division walls, which subdivide it into a great number of compartments. The number of these compartments in each testicle has been variously estimated at from two hundred and fifty to four hundred. These little cavities are for the lodgment of the seminiferous tubes, by which the seminal fluid, or male element of reproduction, is secreted. Each of these compartments contains the from one to six of these tubes, so



Vertical section of the Testicle, showing the Lobes and Ducts. (Gray.)

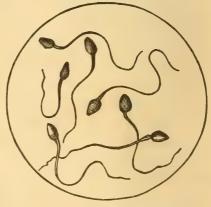
convoluted, and twisted upon themselves as to form a lobule. When untwisted and unravelled, the average length of each tube is found to be about twenty-five inches. The number of these tubes in each testicle is supposed to be about eight hundred and forty. Existing in such great number, and of such very considerable length, they must necessarily be quite minute, their diameter being from one one-hundred-and-fiftieth to one two-hundredth of an inch. They are lined with a mucous mem-

brane containing certain peculiar cells which are the active instruments in the formation of the zo-osperms, the essential elements of the semen. Take it all in all, its framework of connective tissue, forming little workshops for the countless minute tubes; the testicle is a wonderful gland, and we have no choice but to recognize the exquisite workmanship displayed in the mechanism of this function of reproduction. As these multitudinous tubes travel outward from the gland; they coalesce with each other until they all are merged into some twenty canals, which, because of the straight course they take, are termed vasa recta. These in turn pass into a vertical, wedgeshaped, inward projection of the tunica albuginea (technically, the mediastinum), where they form a network, the rete testis. (Rete, a net.) At the upper end of the mediastinum this network terminates in some twelve to twenty ducts which pass through the tunica albuginea, conveying the product of the testis to the epididymis. These ducts are called the vasa efferentia. (Vas, a vessel.) The epididymis is made up of the globus major, globus minor, and body, and is nothing more than a mass of elaborately twisted tubing. The intricate convolutions of the vasa efferentia, which up to this point were straight, form the globus major. At the base of this formation, the various ducts all become united in one, the convolutions and twistings of this one duct being sufficient to make up what are known as the body and globus minor. Some idea may be had of the complexity of the twisted arrangement of this tube, from the fact that when unravelled it measures some twenty feet. Yet the length of the undisturbed epididymis is little more than one inch. Becoming comparatively straight as it leaves the epididymis, of which it is a continuation, regarded from this point as the excretory duct of the testis, and receiving the name of vas deferens (literally, the vessel which carries away), the tube passes up into the abdominal cavity through the inguinal canal (the same canal through which the intestine

makes its descent in the more common form of rupture), continues downward and backward along the side of the bladder. arches downward and backward to its base, and enters the urethra from the under side, just in front of the bladder. Immediately before effecting this entrance into the urethra, it is joined by the duct of the seminal vesicle, the two becoming continuous.

These seminal vesicles are two reservoirs, one for each side, placed at the base of the bladder for the purpose, in part at least, of affording storage for the semen; though they also add a secretion of their own of more or less importance. Surrounding that portion of the urethra into which the seminal ducts open, that is, the first inch of its progress from the bladder outward, is the prostate gland, which opens by numerous minute orifices into the urethra, the object of its secretion being, apparently, to furnish a vehicle for the semen. Finally, we find a pair of glands in front of the prostate, called Cowper's glands, which communicate with the urethra by two small openings. function is unimportant so far as known, and they are the outer most appendages of this labratory of life.

The essential elements in the product of this labratory, are the innumer. able, microscopic bodies, endowed with power of motion, termed spermatozoids or zo-osperms. They may be easily seen in abundance, if a drop of semen be placed under an ordinary microscope; except when there has been an over-drain of seminal fluid. when they may be found (Luschka.) Spermatozoids; magnified 800 diameters. to be scanty in number

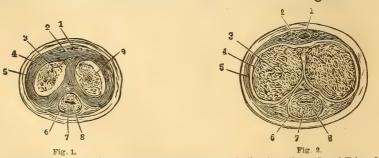


and lacking in vigor, or altogether absent. They are analogous to the pollen of the plant, and within them is lodged the power to fecundate the ovum, and inaugurate a new creation. They appear as minute beings in active motion, consisting of a flattened, oval head or body, with a long slender filament, or tail, attached. "The head is about one three-thousandth of an inch long, one eight-thousandth of an inch broad, and one twenty-five-thousandth of an inch in thickness. The tail is about one five-hundredth of an inch in length." Any one who has ever been a boy and seen a "polliwog," needs no description of their movements. So active, so vigorous, so persistent, so remarkable are their powers of motion, that they were formerly supposed to be animalcules possessed of an independent life of their own. But this opinion is now wholly supplanted by the more rational view that they are merely peculiar anatomical elements, possessed of power of motion, as is ciliated epithelium. Those who have seen the movements of either of these tissues, have seen a sight never to be forgotten; paralleled only by the capillary circulation as seen in the web of a frog's foot, or the circulation of the protoplasm in the plant.

Von Hammen, a German student, discovered these human spermatozoids in 1677. They are formed only in the testes, and the various secretions added to them as they pass outward, but minister to their necessities. These additions are numerous. "In the dilated portion of the vasa deferentia, the mucous glands secrete a fluid which is the first that is added to the spermatozoids as they come from the testicles. This fluid is brownish or grayish. It contains epithelium, and small, rounded granulations, which are dark and strongly refractive. The liquid itself is very slightly viscid. In the vesiculæ seminales, there is a more abundant secretion of a grayish fluid, with epithelium, little colorless concretions of nitrogenized matter, called by Robin sympexions, and a few leucocytes. The glandular structures of the prostate produce a creamy secretion,

which contains numerous fine granulations. It is chiefly to the admixture of this fluid that the semen owes its whitish appearance. Finally, as the semen is ejaculated, it receives the exceedingly viscid secretion of the glands of Cowper, a certain amount of stringy mucous from the follicles of the urethra, with, perhaps, a little of the urethral epithelium." (Flint.) Acton observes on this point; "The semen, however, as emitted, is not the semen as it is secreted in the testes. It may be said, while in the testes, to be in little more than a rudimentary state. When ejaculated it is a highly elaborated secretion. None, in fact, amongst the various secretions of the body seem to require so much time to mature. Not only have cells to be formed and thrown off, as in the case of other secretions, but, after they are liberated in the tubercles of the testis, nuclei have to divide, nucleoli to multiply, and each division of the nucleoli to become, through a gradual adolescence, an adult spermatozoon. When thus prepared it is passed down the spermatic cords to the vesiculæ seminales."

The vital fluid having been prepared in its well-appointed labratory, we next notice the provision made for its proper discharge in the reproductive act. For the accomplishment of this purpose there is provided the penis, or male organ of copulation. In its quiescent state it is pendant and flaceid, and measures from two and one-half to four inches in length. But



TRANSVERSE SECTION OF PENIS.—Fig. 1. Flaceld; Fig. 2. In Erection. No. 1. Dorsal Vein. 2. Dorsal Artery. (There being two, one on either side of the Vein.) 3 and 9 in Fig. 1. Corpora Cavernosa. 3 in Fig. 2. The same in Frection. 4. Tunica Albuginea. 5. Integument. 6. Tunica Albuginea of Corpus Spongiosum. 7. Corpus Spongiosum. 8. Urethra. (Cruveilhier.)

when under excitement, it becomes erect, firm, and enlarged, by an arrangement of its structure which admits of a very great influx of blood, confined within membranous walls. In this condition it measures from five to seven inches in length. The manner of construction which makes possible such remarkable changes in size and general appearance, may be easily comprehended by aid of the annexed cuts.

It is seen that in general make up, the penis is composed of three rod-like bodies, the two corpora cavernosa, and the corpus spongiosum; their relative position and size having been aptly compared to the barrels and ramrod of an ordinary gun. Each is surrounded by an encircling membrane of its own, the tunica albuginea (literally, the white coat), and all three are in turn included in the single sheath formed by the integument and subcutaneous tissue. The corpora cavernosa (the name explains itself), constitute the main body of the penis, and their membranous coats are so strong that, taken together, they are capable of supporting the entire weight of the body without giving way. They are placed side by side, forming the upper five-sixths of the substance of the penis. Their inner ends are attached to the bones of the pelvis. At their outer end they form a single rounded extremity, over which the glans penis, which is an expansion of the corpus spongiosum, fits like a cap. The corpus spongiosum is very much smaller than the bodies just described, lying between and under them, and enclosing in its substance the urethra. Its inner extremity is thickened into an enlargement known as the bulb, which lies just in front of, and between the attachment of the corpora cavernosa to the pelvic bones; while at its free extremity it suddenly expands into the rounded prominence called the glans penis, which is fitted over the united ends of the corpora cavernosa. This glans (glans, an acorn), is in the form of an obtuse cone, presenting at its apex the orifice of the urethra, and at its base the projecting ridge termed the corona glandis. It is rendered exquisitely sensitive by its profusion of nerves. In fact, "in respect to richness in nerves the glans yields to no other part of the economy, not even the organs of sense."

"One important function of the corpus spongiosum is acquired through its bulb-namely, that of assisting in the expulsion of the last drops of urine or semen from the urethra. tate, levator ani, and deep urethral muscles—especially the compressor urethræ-contract upon the fluid remaining in the canal after micturition, in that spasmodic effort called by the French the 'coup de piston.' This forces the last few drops beyond the bulb of the urethra. Now the middle fibres of the accelerator urinæ—those which surround the bulb and adjacent portions of the corpus cavernosum—contract and forcibly drive the blood, which was contained in the areolæ of the bulb, forward along the corpus spongiosum, forcibly distending that body, and thus bringing the walls of the urethra more closely into contact in a progressive wave. This helps to explain, as shown by A. Guerin, why the last few drops of urine do not escape promptly, but dribble away in cases of organic stricture of any severity; for, with such a stricture, the areolæ of the erectile tissue become more or less obliterated at the constricted point, and an obstacle is formed to the free passage of the wave of blood forward along the corpus spongiosum." *

The power of erection possessed by the penis resides in the two corpora cavernosa, and the corpus spongiosum; all three of these bodies being made up of what is known as erectile tissue. "Erectile tissue consists essentially of an intricate venous plexus, lodged in the interspaces between the trabeculæ. (The numerous fibrous bands given off from the internal surface of the sheaths surrounding the corpora cavernosa and spongiosum, which, interlacing in every direction, form an intricate system of meshes, are given the name of trabeculæ.) The veins form

^{*}Diseases of the Genito Urinary Organs. Van Buren & Keyes.

ing this plexus are so numerous, and communicate so freely with one another, as to present a cellular appearance when examined by means of a section; their walls are extremely thin, and lined by squamous epithelium. The veins are smaller in the glans penis, corpus spongiosum, and circumference of the corpora cavernosa, than in the central part of the latter, where they are of large size, and much dilated. They return the blood by a series of vessels, some of which emerge in consid erable numbers from the base of the glans penis, and converge on the dorsum of the organ to form the dorsal vein; others pass out on the upper surface of the corpora cavernosa, and join the dorsal vein; some emerge from the under surface of the corpora cavernosa, and, receiving branches from the corpus spongiosum, wind round the sides of the penis to terminate in the dorsal vein; but the greater number pass out at the root of the penis, and join the prostatic plexus and pudendal veins." (Gray.)

"In these parts (the corpora cavernosa and spongiosum), the arteries are large, contorted, provided with unusually thick muscular coats, and connected with the veins by vessels considerably larger than the true capillaries. They are supported by a strong fibrous net-work of trabeculæ, which contains non-striated muscular fibres; so that, when the blood-vessels are completely filled, the organ becomes enlarged and hardened. Researches upon the nerves of erection show conclusively that the vessels of erectile tissues are distended by an enlargement of the arterioles of supply, and that there is not simply a stasis of blood produced by constriction of the veins, except, perhaps, for a short time, during the period of most intense venereal excitement. In experiments upon dogs, Eckhard discovered a nerve derived from the sacral plexus, stimulation of which produced an increase in the flow of blood through the penis, attended with all the phenomena of erection. This nerve arises by two roots at the sacral plexus, from the first to the

third sacral nerves. In the experiments referred to, by a comparison of the quantity of venous blood coming from the penis before and during the stimulation of the nerve, Eckhard found a great increase during erection. It is probable that, in addition to the arterial dilatation, when the penis attains its maximum of rigidity, there is a certain amount of obstruction to the outflow of blood, by compression of the veins, and that the rigidity is increased by contraction of the trabecular muscular fibres of the corpora cavernosa." (Flint.)

"Dr. Newman holds, in regard to the mechanism of erection of the penis, that normal erection is under the influence of the nervous system. From the peripheral end, an independent origin is in the spinal nerves, and has been traced upwards into the cerebrum. Eckhard's experiments on dogs are very instructive, and prove the above. After dividing the spinal column above, he caused erection by applying electricity to the lumbar nerves. This proves that we have a middle center in the lumbar plexus, which governs the erections in part. But as this lumbar plexus is again dependent on the nerve centers, we may say that erection begins in central organs in the cerebrum. the spinal column could be divided, or a disease cause complete paralysis, the lumbar plexus would be paralyzed in such a degree that erection would be impossible. In Eckhard's experiment, the electric power took, artificially, the place of the power of the nerve centers in the cerebrum, and thereby proves that, while we have an independent middle plexus of origin, in the spinal nerves, causing erections, the principal controlling center is in the cerebrum. Another center we find in the peripheral nerves of the genitals themselves, which also have an independent action. This last center is the weakest of the three, but it exists. To recapitulate, we have three centers governing erection: 1. Nerve centers in cerebrum (Psychical). 2. Lumbar plexus, presiding direct over erection. 3. Peripheric nerves of The mechanism of erection is not merely a retengenitals.

tion of venous blood, but more an afflux of arterial blood into the elastic erectile tissue of the penis, which is well recognized by our modern physiologists. But this mechanism cannot be put in motion of itself, and is induced and governed by the power of the nervous system, as explained." *

In the exercise of the reproductive function, Nature, economical Nature, becomes prodigal. On the one side she lavishes nervous force without stint; on the other she sends to the work the great life-current of the blood in close-pressed and urgent pulses. Just where the spermatic ducts open into the urethra is a longitudinal ridge, the veru montanum, which becomes distended and shuts off all communication with the bladder, and leaves the reproductive passages complete, and free from the intrusion of any other function. Having gathered these life forces together in such force and tension, Nature expends that most expensive product—that which it costs her most to manufacture—the seminal fluid. "Thus, on the one hand, the glans penis, endowed as it is with sensibility, and, on the other hand, the irritable muscular apparatus of the bulb, act and react upon one another as reciprocal exciting causes. The glans penis, when excited, reacts on the bulb, which sends more and more blood-the exciting material-towards it. Each new rush of blood to the glans exalts its sensibility; the bulbo-cavernosus muscle, irritated in its turn, progressively accelerates its con tractions, in order to satisfy the requirements of the glans, which also increase more and more, till at last, by alternate actions, the entire apparatus reaches its highest point of excitement. At this moment a new series of secondary reflex phenomena is suddenly produced between the glans penis and the muscles which produce evacuation of the vesiculæ seminales, these muscles become excited, a spermatic ejaculation is produced, and at this point the currents of exchange cease, the special function is accomplished, and the organ, as soon as

^{*} Medical Review.

Nature has gained her end, returns to its ordinary state of repose and vegetative life." (Kobelt.)

And not alone does the reproductive apparatus sink into As the whole man feels a like sense of fatigue, whether the brain or the muscles have borne the brunt of his work, so the repose following the special exercise of this function becomes the repose of the entire organism, and not of the reproductive system alone. It is curious to note the contradictory assertions of various writers on this point. One will remember the value of the product contributed, for one ounce of semen has been calculated to be the equivalent of forty ounces of blood; remember that, undoubtedly, the construction and ejaculation of this secretion is the heaviest call made upon the vital forces; remember the quiet sinking to rest of the individual after this exertion; and set it down that exhaustion follows the exercise of this faculty. Another, having in mind the sense of satisfaction which pervades the body upon the successful accomplishment of any function, and the gratifying of any appetite; the sense of contentment always accompanying the full completion of any vital task; insists that it should be followed by a feeling of exhilaration. Both are right. The forces of the nervous system have been most actively engaged. and the exhaustion is that of successful effort, the exhilaration that of honestly earned fatigue. Longfellow pictures the same condition in another connection:-

"Toiling,—rejoicing.—sorrowing,
Onward through life he goes;
Each morning sees some task begin,
Each evening sees it close;
Something attempted, something done,
Has earned a night's repose."

If these pages fall under the eye of any who feel that the exertion is overstated, or that the reaction is not estimated at its full force, let them bear in mind that we are speaking of the average man, not of individual exceptions which tend toward

either extreme. And were the present generation relieved from that nervous overstrain which the present fast mode of life imposes upon it, there can be no question that the reaction of fatigue would grow more insignificant. While popular attention directed to the subject has begun the improvement of our physical status, yet it cannot be denied that we are suffering "When men lived in somewhat from race degeneration. houses of willow, they were of oak; and when they lived in houses of oak, they were of willow," says Bede. "I hold it to be morally impossible for God to have created, in the beginning, such men and women as we find the human race, in their physical condition, now to be. Examine the book of Genesis, which contains the earliest annals of the human family. As is commonly supposed, it comprises the first twenty-three hundred and sixty-nine years of human history. With childlike simplicity this book describes the infancy of mankind. Unlike modern histories, it details the minutest circumstances of social and indvidual life. Indeed, it is rather a series of biographies than a history. The false delicacy of modern times did not forbid the mention of whatever was done or suffered. And yet, over all that expanse of time-for more than one-third part of the duration of the human race-not a single instance is recorded of a child born blind, or deaf, or dumb, or idiotic, or malformed in any way! During the whole period, not a single case of a natural death in infancy, or childhood, or early manhood, or even of middle manhood, is to be found. The simple record is, 'and he died,' or he died 'in a good old age, and full of years,' or he was 'old and full of days.' No epidemic, or even endemic disease prevailed; showing that they died the natural death of healthy men, and not the unnatural death of distempered ones. Through all this time (except in the single case of Jacob, in his old age, and then only a day or two before his death), it does not appear that any man was ill, or that any old lady or young lady ever fainted. Bodily pain from disease is nowhere mentioned." * To-day, the oculist to take care of our eyes, the dentist to take care of our teeth, the dermatologist to take care of our skins, are necessities accepted without question.

More than this, we are not satisfied that they repair damages merely, but we demand of them that they be teachers as well, for we have learned that it is needful that we know how to take care of these trusty servants of ours. And having noticed how the work is carried on by that department of our organism which furnishes the frail bark in which new life from the unseen is ferried over to these shores of time, that the fading life of this land of mortality may be reinforced from the realms of the immortal,—it is both natural and logical that we turn our attention to the consideration of such measures as may properly belong to the ordinary care of this function.

Just as in the case of all other organs and functions, it will be seen that the care of this involves only what would be dictated by the simplest common sense. The suspension of the testes in the scrotum would present to any mechanic the suggestion that any loss of tone, without or within, would probably result in more or less external frictions, or internal sense of weight and pulling and uneasiness, as the depression of the vital elasticity would render these tissues more subject to the laws of inorganic mechanics, -and so it is. The same results may also be induced by extreme and unusual exercises and exertions, as for instance, the constant saddle exercise of the cavalryman, or heavy lifting by those whose muscular apparatus has not been gradually trained to the degree of endurance suddenly demanded of it. These difficulties, most serious to those called upon to endure them, are effectually remedied by a sensible device known as the suspensory bandage, which places about the scrotum an external artificial sac of netted silk, whose support is exceedingly welcome, and brings with it no drawback

^{*} Horace Mann.

whatever of inconvenience to wearer, or deleterious effect of any sort. It should also be remarked that no uneasiness need be felt if it be noticed that the left testis hangs a little lower than the right. It is almost invariably so; common sense dictates that it should be so from the mechanical influences surrounding them; for the liability to inconvenience and injury would be greatly enhanced were they suspended exactly side by side. Speaking of this inequality of suspension, the noted English surgeon, Sir Benjamin C. Brodie, observes that "it would be very inconvenient if it were otherwise."

Passing now to the other masculine appendage, let us notice, first, what is a frequent source of anxiety, and put the statement clearly that there is absolutely no proportion existing between size, and efficiency or ability to perform this function. The athletes of olden time, who fixed the standard for the world in matters of physical perfection, we find to have possessed, at this point, symmetry combined with less than average size. So that those who have been troubled with the misgiving that they were the victims of arrested development, or diminishing size, may well cast to the winds all their fears; for any difficulty from this cause is unknown to medicine. It may seem to be an unimportant matter, hardly deserving of notice, yet it has been the real cause of so much disquietude, that it is at once worth while to consider it, and pleasant to be able to speak positively.

In our study of the anatomy of the apparatus, no mention was made of that sheath of integument which, extending forward, covers and protects the sensitive glans and its profusion of nerves. It is technically known as the prepuce. It is of great interest to us, for the reason that, directly and indirectly, it is the cause of more derangement and over-excitement, and is more frequently subject to a mistaken development than any other part of the apparatus. Why it should be so prone to set up an abnormal nervous irritation, is soon understood. The mucous membrane lining the prepuce, and that forming the

outer surface of the glans, lie in contact with each other. Two mucous surfaces placed in constant and uninterrupted contact with one another, become very much thinned, very delicate, and extremely sensitive. Beside this, there is deposited between the surface of the glans, and the mucous lining of the prepuce, a cheesy secretion, called smegma. This, if allowed to accumulate, becomes an added source of irritation to these over-sensitive membranes. Thus these two conditions tending to produce an abnormal state of affairs at a point alive with nerves, react upon each other, to produce the greatest possible The excited mucous membrane is readily affected disturbance. by the presence of a foreign body, which the smegma is, in effect; and losing its healthful tone, its secretions become vitiated, and are thus more irritating than before. The remedy for this undesirable condition of things, is found in proper attention to cleanliness. The prepuce should be drawn back, and the surfaces cleansed, with water, from this smegma. This cleansing should be considered as much a matter of course, as the cleaning of one's finger nails. The failure to attend to this is the rule rather than the exception, because of ignorance of the propriety and necessity of any such procedure.

The result of this oversight is found in many an unpleasant local irritation and inflammation, and in many annoying and enervating abnormal excitements of the whole apparatus. And these may, in turn, be reflected upon the general nervous system, producing derangements of the general health which seem almost incredible to those who have not been brought into frequent contact with them. To properly accomplish this cleansing, it is necessary that the prepuce be drawn, with reasonable facility, back of the elevated ridge at the base of the glans. The number of cases in which the prepuce is so long, and its orifice so constricted, as to render this a matter of difficulty, or altogether impossible, is a constant surprise to the physician. This condition is technically known as phimosis. It is, there-

fore, under the head of phimosis that we find record of the ill consequences attending neglect of this obscure cranny of the body. Dr. Lewis A. Sayre, of New York, has repeatedly pointed out that club-foot (set up by muscular contraction of the lower extremities from reflex nervous irritation), paralysis, relaxation of the muscles of the back with curvature of the spine, and other nervous disorders result from this condition. "There is now no doubt that many cases of muscular inco-ordination, spasm and paresis are due to phimosis, as are also occasionally various other disturbances of the nervous system, such as amblyopia, hysteria, hypochondriasis, etc. Hernia is not uncommon as a result of congenital phimosis. Out of fifty such cases selected at random, Mr. Kempe found that in thirty-one there was rupture." * "Prolapsus ani not unfrequently accompanies phimosis in children when the prepuce becomes inflamed, and symptoms resembling those of stone in the bladder are not uncommon from the same cause." † "The constitutional symptoms which are developed by this peculiar disorder are numerous, and are often overlooked. They are all affections of the nervous system, and vary in intensity from ordinary sleeplessness and nervous jactitations, to complete inco-ordination of movements and loss of equilibrating power. Sometimes the affections simulate a typical and interesting case as exhibiting to what degree these symptoms may be present. It was that of a bright lad of seven years, who for several months before coming under observation had been losing strength, appetite, and flesh, and was restless and 'nervous,' and took but little notice of anything. Locomotor ataxia was a marked symptom: cannot co-ordinate his members in any act; could not walk across the room without staggering and pitching headlong. The same want of co-ordination was manifested when he attempted to feed himself; he

^{*}J. William White. Holmes's System of Surgery.

[†]Genito-Urinary Diseases. Van Buren & Keyes.

made bad work of it, and was soon forced to give it up. It seemed impossible for the will to guide the hand to the mouth. Intellect not disturbed, only the hebetude before mentioned was marked. Responded to questions in monosyllables, and speech was not very distinct. Pupils widely dilated; at times an outward and slightly upward squint of both eyeballs, from paresis, as was supposed, of the third pair of nerves. Marked dullness of hearing. No febrile heat; pulse normal. No pains complained of. Could not elicit from him whether he experienced any abnormal sensations on attempting to put his feet on the floor, or whether the tactile or muscular sense was perverted. Hyperæsthesia of general surface. Shortly after coming under treatment he had a severe fit of epileptiform type. There was no constipation or difficulty of micturition.

"For upwards of a week he was treated with nervous sedatives with a view to quiet the excessive nervous irritability manfested during the night, with only partial benefit, as his general condition did not improve. One day, at an early morning visit, the patient lay naked in his mother's arms, when a glance revealed phimosis, the prepuce was greatly elongated, strangulating the glans, and the urinary punctum was minute. Circumcision was performed, and from that time steady improvement set in, and complete recovery soon followed. Dr. John Thompson, of Albany, records a case of epileptiform convulsions produced by phimosis, and I have frequently relieved intense nervousness, jactitations, and vomiting by circumcision." * A case of epilepsy having its cause in phimosis and its cure in circumcision, is fresh in the mind of the writer, having recently come under his personal observation. regard to the more remote effects of congenital phimosis, some doubts might be legitimately entertained, were it not for the circumstantial report of the symptoms, and the fact that simple

^{*}System of Surgery. Helmuth.

excision of the elongated prepuce has in many cases brought complete and permanent relief.

"Within the last few years additional cases of the remote effects of congenital phimosis and of a small meatus urinarius have been reported by Drs. Sayre, Moses, Otis, Green, Brown, Sequard, and others. These cases have been ably summed up, and others added, in a report from the Surgical Section to the New York Academy of Medicine, by Dr. Yale, who says: 'The forms of nervous disturbance observed in these cases, so far as I have ascertained, have been, notably, inco ordination of muscular movements, including those necessary to speech, less commonly spasm or spastic contraction, and paresis, generally of the lower extremities. I find no case of paralysis of sensation, but hyperæsthesia is often mentioned. Several cases of amblyopia have been published. A mental condition resembling hysteria or hypochondriasis is a frequent element in the clinical histories.'

"Verneuil reports a very interesting case in which careful microscopic examination of the excised prepuce showed that the terminal plexus of nerves had become hypertrophied, and in which the nervous symptoms were thus fully accounted for." *

As has already been indicated, in all those cases where the existence of phimosis in greater or less degree interferes with habits of cleanliness, and exposes the system at large to possibilities of disaster, the rite of circumcision, a most excellent sanitary measure practiced by many nations, past and present, is by all means advisable. It is not in any sense a formidable operation. It consists merely in the removal of the redundant and constricted extremity of this tegumentary envelope. It is a more necessary procedure in the warmer climates for obvious reasons, and it will be found that those nations practicing circumcision as a sanitary regulation are those which occupy the warmer latitudes. But under the conditions specified it

^{*}The Venereal Diseases. Bumstead & Taylor.

becomes a necessary and beneficent operation in our own country and climate. An incidental benefit, by no means insignificant, attending this removal of the smegma and washing of the surfaces, is procured in the obviation of that undue thinning and sensitiveness engendered by the long and uninterrupted contact of two mucous surfaces. For all these reasons don't forget to keep this out-of-the-way nook of the body clean; take as much pride in so doing as you do in keeping all other surfaces clean; and if there be any mechanical obstacle in the way, get your family physician to remove it.

With the exercise of proper care over this reproductive apparatus, as pointed out above, and which is certainly not disproportionate to that which we bestow upon other functions; with some useful pursuit which shall give us that indispensible occupation which we must have or be eaten out with the corrupt corrosion of idleness; and with a proper care for that physical balance of the whole man which is the prime requisite for success in any and all departments of human industry; there will be little danger of more than a rarely recurring discharge of the seminal fluid during the unconscious hours of the night, an accident which has been the dread and terror of so many thousands of young men.

The subject is a large and most important one, and is considered at length elsewhere, but the present chapter would be incomplete without its mention. It is sufficient to say in this connection, without going deeply into the subject, that while frequent losses of this kind are disastrous, yet the young, unmarried man may expect them at considerable intervals; and so occurring they are perfectly physiological and normal. There will be the gradual filling up of the reservoirs, and there must come the emptying; but if the energies be absorbed in proper pursuits, and all causes of local irritation and stimulation be avoided, the activities, the powers of this creative system will lie dormant to such an extent that the filling of the

receptacles will be exceedingly slow, and the emptying ocrrespondingly rare,—the vital energies being absorbed in other directions; and no depression or exhaustion, mental or physical, will be noticed as a result of such occasional emission.

Finally, let me impress upon you the importance of the bath. It may seem an altogether superfluous piece of work to urge this matter in these days of enlightenment, household conveniences, hot and cold water and bath-tubs. But the fact is that the popular carelessness regarding bathing is a thing phenomenal. It is but a short time since that a business man of good standing remarked, with the air of one who does his whole duty, "Oh, yes, I bathe about once every six months!" Beside, I fancy there are more who have not the incitement of the bathtub in the house, than there are of those who have. Be that as it may, let those without the bath-tubs take heart, for there is something better for them, and let those who have the bathtubs use them all they wish, but add to them something better, and let the favored and unfavored alike provide themselves with a good large bath-sponge, and every night on retiring take a sponge bath of moderately cool water from head to foot; and I am sure that they will find themselves cleaner and fresher and fuller of self-respect than ever before. I say cleaner, because a man who uses this bath every night will be cleaner than if he use the full bath in the tub every other night, and I know of none who use the tub oftener than that. I say fuller of self-respect, because he who is careless of personal cleanliness carries about with him an unconfessed sense of degradation which inevitably prevents his being a man among men to the full of his capacity, whether he be conscious of it or not, just as the atmosphere presses upon him with a weight of fifteen pounds to the square inch, and does not abate that pressure a single ounce merely because he may be unconscious of it. And if any one chance to read these lines who has never awakened to this truth, I beseech him to try the efficacy of clean

water as a conferer of knighthood. I am sure that from the depth of his increased sense of manliness he will bless the day when he made the experiment. Truly, cleanliness is next to godliness.

But this excursus on the subject of the bath is not a digression merely, nor merely because that with the cleansing of the entire skin will come the cleansing of the integument of a particular region, as the greater includes the less. The general daily bath on retiring is important because over-excitement of the reproductive system is caused by just two things. That is, the immediate causes are just two. And the first of these is nervous irritation, both at the nerve centers, and the terminal ramifications; and the second is a determination of blood to this region. Now the bath at retiring calls the blood away from its work of stimulating the central machinery, takes it away from the nerve centers, distributes it equally over the sixteen square feet of surface belonging to the average adult, and thus allows the nerve centers to sink into repose. For blood is to the nerve centers what fire is to gunpowder, and the nerve centers in the enjoyment of restful quiet are not going to send an uncalled for deluge of blood to the reproductive apparatus. I know that the conviction is deeply rooted that it is damaging to take a bath at night, because it is supposed to be incompatible with fatigue, and I know that the morning has been as persistently lauded as the proper time. Yet who that will stop to remember that the whole theory of the bath is supposed to lie in the one word "reaction;" that the vital forces are at their lowest ebb in the morning; that then the temperature of the body is at its lowest, that it is difficult to resist the temptation to prolong all sorts of work and play far into the evening, because ones entire machinery seems then to be running at its smoothest and best; -who will fail to set the old idea down as a mistaken one? It is a slovenly way of living to go to one's room at night, and with cold feet, and excited head, and skin bearing upon its sur-

face the debris of the day's tissue-waste, tumble into bed to sleep uneasily, to dream and waken, the victim of morbid excitements of all sorts, which render the hours of repose a nightmare. It is to lose the precious hours of God-given sleep, the only elixir of life in the universe which can render restitution to the nervous system for the drafts made upon it during the day. Shall we not rather, by means of the bath, call the blood current from the rapidly running mill of life, to the surface, and the quiet distribution of the excited torrent which this surface call implies. Then shall the wheels of life move slowly and yet more slowly as we sink into the restful oblivion of childhood's sleep; with no dream save perchance the misty vision of the guardian angel hovering over our couch. Through the ministry of this celestial rest we shall learn, all unconsciously, the lesson of the night's uplifting. Before we have even guessed that "wisdom mounts her zenith with the stars," the stilly night has come, a winged messenger, bearing to us our supremest inspiration.

- "I HEARD the trailing garments of the Night Sweep through her marble halls! I saw her sable skirts all fringed with light From the celestial walls!
- "I felt her presence, by its spell of might, Stoop o'er me from above; The calm, majestic presence of the Night, As of the one I love.
- "I heard the sounds of sorrow and delight,
 The manifold, soft chimes,
 That fill the haunted chambers of the Night,
 Like some old poet's ryhmes.
- "From the cool cisterns of the midnight air
 My spirit drank repose;
 The fountain of perpetual peace flows there,—
 From those deep cisterns flows.

"O holy Night! from thee I learn to bear What man has borne before! Thou layest thy finger on the lips of Care, And they complain no more.

"Peace! Peace! Orestes-like I breathe this prayer!

Descend with broad-winged flight,

The welcome, the thrice-prayed for, the most fair,

The best-beloved Night!"

Longfellow.

CHAPTER V.

THE PHYSICAL BALANCE.

I take my watch from my pocket and open the outer and inner cases and expose the movement. I follow the imprisoned power from the coiled main-spring, through wheel and pinion, and wheel and pinion, until I come to that polished and toothed wheel which, by means of lever and hair-spring, makes its tireless turns back and forth with unflagging vigor. Stop that wheel and the watch might be an ordinary lump of metal so far as any manifestation of power or movement would tell you the contrary. Stopping that wheel has stopped the whole watch. Having made stationery that one delicate staff, every pinion is motionless. Again, take this one wheel from the watch, say, if you will that you will not have it in the way, and the main spring finds itself suddenly released from all irksome control, and unwinds itself with all speed, while the wheels spin round furiously, their rapid running accomplishing no useful purpose; and in a few seconds the watch lies spent and useless with all its hours of work ahead of it. I ask my watch-maker, Mr. Dickerson, what he calls this curious wheel which stands between stoppage from obstruction on the one hand, and stoppage from the dissipation of power on the other; and he tells me it is the "balance."

I step round to the grain elevator to ask my friend, Deacon Hough, his opinion as to the probable prices of grain a month hence; and I find him with a countenance so disturbed as to be almost undeacon-like, and when I ask him what is the matter, he says that some one has been meddling with his scales, and he finds that they are "out of balance." And having had a good

old fashioned "pious training," which has left my memory, like a polka-dot calico, studded over with such definite propositions as "Man's chief end is to glorify God and enjoy him forever,"—the rows one way corresponding to the Sundays, and the other to the succeeding years,—I at once begin to indulge certain very apt observations as to which is most out of balance, the scales or the Deacon, and walk up town feeling very satisfied with the Deacon indeed, because he has furnished me the material for such edifying meditations.

As I pass up the street I run across Charles Ashburner. Charles and I used to wrestle together with "vulgar fractions" in the little country school-house; but now he has just come to the city and opened a large retail house, and he wants me to come in and see how well he is doing. So I follow him in, and he picks up from his desk and hands me a formidable looking sheet with long parallel rulings and columns of figures. At the top I read "Trial Balance, August 1st," and I begin to fear that this subject of balances is going to be too much for me, no matter how well I may be grounded in the Shorter Catechism. And so it proves. The morning paper on its commercial page speaks in loud head lines of import and export, and the "balance of trade." On the political page Mr. Conkling talks of the "balance of power," and again the temptation to moral reflections comes upon me with irresistible force. I go home via the water-works, for the steady calm with which the great engine performs its mighty task is the best restorer of equinimity I know for a mind that has grown hot and restless under the friction of its daily task. Yet even here the "governor" and fly-wheel seem to have that irrepressible "balance" written all over them.

But whatever conceits we may indulge about that quality we call balance, and however universal its reign may be, from the molecule of the paving stone under our feet, to the stars above our heads, just now our concern is with the balance of the forces which go to make up the perfect and complete man. And even here we shall make no attempt to follow out the subdivisions of the theme, such as the balance of waste and repair in the function of nutrition. Looking at the subject in its more comprehensive aspects we note, first, the intellectual balance, second, the physical balance, and third, the reactions which the mental and physical exert upon each other. With the first, the intellectual balance, by itself considered, we have nothing to do in the present discussion. But the second, the physical balance, is at once the key and contents of our study; and with the third, the mutual influence of the intellectual and physical upon each other, form a topic of paramount importance. Notice, too, that the influence of the physical state upon the mental is of much greater importance than that of the mental upon the physical-not alone because of absolute relative quantity or intensity, but because the physical almost invariably takes the initiative, the mental having apparently learned that most difficult of boyhood's lessons, "not to speak until spoken to;" but failing perhaps to learn as well that other lesson, not to "strike back." The mental does "strike back" at the physical, but the physical strikes first, and so we shall turn our whole attention to the physical and its effect upon the mental.

The first thing for us to do is to look the facts squarely in the face, and make honest acknowledgment that we have lost our physical balance, with exceptions so rare as to be unworthy of mention. The fact that a physician in any town, large or small, may say of every man and woman he meets on the street, that he or she has either just been under the care of a doctor, or is under his care, or will be within three months, or ought so to be, and be correct in this assertion ninety-nine times out of a hundred, is testimony sufficient to justify the indictment. Why have we lost our physical balance? Never was a nation better clothed, never was a nation better fed, never was a nation better housed. We, as a people, excel in our knowledge

of physiology, and hygiene is a household word: We understand the laws of health, and are particular about our food and clothing, and the warming and ventilation of our homes,—and yet we are not well, and we cannot understand the reason why this is so. We get the best doctor we can, and give up the problem as unsolvable. What is the matter?

Our idea of the proper sphere of the doctor is a great mistake. Listen to our own beloved poet, Longfellow, as he sings of health. As we listen to the song we catch the words of the refrain, and they are these,—

"Joy and Temperance and Repose Slam the door on the doctor's nose!"

Is he right? Yes, he is right in spirit, but wrong in phrase. He meant to sing that joy and temperance and repose slam the door on all health's foes-slam the door on the doctor's dose. and relieve him from the unwelcome necessity of asking his friends to swallow drugs. Away with this antiquated idea that the doctor's chief duty is to make people well after they have gotten sick. What! is a machinist chiefly one who replaces broken piston rods and damaged bearings? Is he chiefly and essentially a repairer? The manufacture of steam engines is made a successful industry only by the demand for them. that demand best sustained by putting the noble machinery into the hands of incompetent engineers that it may speedily become broken and useless? So is it the doctor's first and chief work to keep people well, to guard them from the possible and probable attacks of disease, to be the conservator of health, and incidentally, to do what lies in his power for the sick.

The hearty acceptance of this evidently correct estimate of the doctor's calling, should be insisted upon. They are primarily not pathologists, but sanitarians. They are first teachers,—teachers, expounders, interpreters of the laws of health; and only after that prescribers of medicines. "There is, indeed," says Huxley, "a popular superstition, that doctors know all about

things that are queer or nasty to the general mind;" and only incidentally take cognizance of the pure, sweet things of health. More just is the conception of Bacon. "The human organization, so delicate and so varied, is like a musical instrument of complicated and exquisite workmanship, and easily loses its harmony. Thus it is with much reason that the poets unite in Apollo the arts of music and of medicine, perceiving that the genius of the two arts is almost identical, and that the proper office of the physician consists in tuning and touching in such a manner the lyre of the human body as that it shall give forth only sweet and harmonious sounds."

Were this not true, I should be playing traitor to my profession, and doing what little I could to injure the business of every brother physician in the land. For I want to say something which shall help you to keep your health and multiply your strength. I want to show you that instead of a headachey, rickety, friction-consumed brain, you may have an intellect that shall be like the buttressed wall of a cathedral, equal to any strain that may come upon it, and bearing easily the weight of work which the days and weeks and months and years must inevitably bring. And I want to show you that a brain of marvellous power belongs in a physical frame which shall be its appropriate complement. That while you may have no use for the meaty muscle of the blacksmith, yet still you can and should have sinews of steel. That this brain of stable equilibrium must be tenanted in a physical house which hath foundations. That mental equipoise and physical equilibrium are not at war, but mutually necessary to each other. That it is mental and physical, not mental versus physical. That "no man is in true health who cannot stand in the free air of heaven, with his feet on God's free turf, and thank his Creator for the simple luxury of physical existence." That in this symmetrical training of body and mind is found the very best preparation for every possible exigency of mental and physical circumstance. When

Archibald Maclaren, of the University Gymnasium, Oxford, asked the African explorer, Captain Burton, what training he adopted to prepare himself for the hardships he was about to undergo, his answer was, "The best training for work in Africa is, I find, to take the best care of myself that I can while at home." "Tom Brown told the writer that, when in Parliament, he could work through a whole week together on but four hours of sleep a night, and be none the worse for it, provided he could have all he wanted the next week, and that since he was twenty-five he had hardly known a sick day."

It being freshly emphasized in our minds that the doctor's normal work is as Hygeia's prime minister, not as a policeman detailed to shadow disease; that all physicians are, by authority of their profession, teachers, it will hardly seem an impertinence to question, a little, our educational system. What are our colleges and universities thinking about, that they have no chair which shall teach our sons and daughters the laws of health and their own being; no chair which shall point out the practical methods of keeping at the point of one's greatest work capacity?

I do not forget that in many of them some hard-worked resident physician is invited to give a few lectures on semi-medical topics, which, from the college side, look ornamental in the catalogues and announcements, and from the doctor's side are an unimportant addendum to his real work, and from the student's side are ciphers as to anything learned which shall be of practical value. I do not forget these harmless little amusements, but they are no answer to my question. Do our colleges teach Greek by a few lectures from the best known pastor of the town? Do they teach Latin by a few lectures from a superannuated clergyman? Do they teach mathematics by a short course of lectures from the most competent bank accountant? In the words of James A. Garfield: "What are our seminaries and colleges accomplishing in the way of teaching

the laws of life and physical well-being? I should scarcely wrong them, were I to answer, Nothing: absolutely nothing. The few recitations which some of the colleges require in anatomy and physiology, unfold but the alphabet of those subjects. The emphasis of college culture does not fall there. The graduate has learned the Latin of the old maxim, 'Mens sana in corpore sano; ' but how to strengthen the mind by the preservation of the body, he has never learned. He can read you in Xenophon's best Attic Greek, that Apollo flayed the unhappy Marsyas, and hanged up his skin as a trophy; but he has never examined the wonderful texture of his own skin, or the laws by which he may preserve it. He would blush, were he to mistake the place of a Greek accent, or put the ictus on the second syllable of Eolus; but the whole circle 'Liberalium Artium,' so pompously referred to in his diploma of graduation, may not have taught him, as I can testify in an instance personally known to me, whether the jejunum is a bone, or the humerus an intestine. Every hour of study consumes a portion of his muscular and vital force. Every tissue of his body requires its appropriate nourishment, the elements of which are found in abundance in the various products of nature; but he has never inquired where he shall find the phosphates and carbonates of lime for his bones, albumen and fibrine for his blood, and phosphorus for his brain. His chemistry, mineralogy, botany, anatomy, and physiology, if thoroughly studied, would give all this knowledge; but he has been intent on things remote and foreign, and has given but little heed to those matters which so nearly concern the chief functions of life. But the student should not be blamed. The great men of history have set him the example. Copernicus discovered and announced the true theory of the solar system a hundred years before the circulation of the blood was known. Though from the heart to the surface, and from the surface back to the heart, of every man of the race, some twenty pounds of blood had

made the circuit once every three minutes, yet men were looking so steadily away from themselves that they did not observe the wonderful fact. His habit of thought has developed itself in all the courses of college study." Again, asking the question, "What kinds of knowledge should be the objects of a liberal education?" he makes answer: "First, That knowledge which is necessary for the full development of our bodies and the preservation of our health." "I am certain," writes Horace Mann, "I could have performed twice the labor, both better and with greater ease to myself, had I known as much of the laws of health and life at twenty-one as I do now. lege I was taught all about the motions of the planets, as carefully as though they would have been in danger of getting off the track if I had not known how to trace their orbits; but about my own organization, and the conditions indispensable to the healthful functions of my own body, I was left in profound ignorance. Nothing could be more preposterous. I ought to have begun at home, and taken the stars when it should come their turn. The consequence was, I broke down at the beginning of my second college year, and have never had a well day since. Whatever labor I have since been able to do, I have done it all on credit instead of capital, -a most ruinous way, either in regard to health or money. For the last twenty-five years, so far as it regards health, I have been put, from day to day, on my good behavior; and during the whole of this period, as an Hibernian would say, if I had lived as other folks do for a month, I should have died in a fortnight."

It may be objected that to give such prominence to the physical in education would be to run counter to the traditions of our colleges, and their reverence for the established order of things, and the belongings of antiquity. But in so doing they would have the endorsement of their most revered oracles. With the Greeks, education meant symmetrical development, physical and mental. They "made the education of their

children of both sexes an affair of state-it was done at the public expense. In this way they became the type of the human race in its best characteristics. In form they were all but perfect; in courage unequalled; they excelled in the arts and sciences; in polite literature, in poetry and history, they are still our masters. Their theory of education, and the practical results of it, were better than ours at this day." Plato declares: "A good education is that which assures to the body all the beauty, all the perfection, of which it is capable. secure this beauty, it is only necessary that the body should be developed, with perfect symmetry, from the earliest infancy. The first stages of development are always most controlling and most enduring. If the exercise does not keep pace with the growth of the body, it becomes subject to I know not how many infirmities." Goethe asserts that "The best plan of education is that of the Hydriotes, the Greek trading-sailors, who take their infant boys out to sea and let them sport around amid oakum and belaying-pins before they learn to handle them with a business purpose. Such a school has graduated the heroes who, with their own hands, could grapple the fire-boat to the flag-ship of the enemy." Even the chinese "regard the Cong Fou (a system of physical exercise), as a true exercise of religion, which, by curing the body of its infirmities, liberates the soul from the servitude of the senses, and gives it power of accomplishing its wishes on earth, and of freely elevating itself to the perfection and perpetuity of its spiritual nature in the Tao, the realm of the great creative Power." Our colleges lack neither precedent nor precept, the most illustrious of modern and ancient times, insisting upon the necessity for, and utility of physical education.

It may be objected that too much importance is attached to this matter by those whose daily duties have to do with the care of the physical man. This is the objection of a *doctrinaire*, not of an active man of affairs. Charles Sumner wrote from

Aix; "It is with a pang unspeakable that I find myself thus arrested in the labors of life, and in the duties of my position. This is harder to bear than the fire." "If any one doubts the importance of an acquaintance with the fundamental principles of physiology as a means to complete living, let him look around and see how many men and women he can find in middle or later life who are thoroughly well. Occasionally only do we meet with an example of vigorous health continued to old age; hourly do we meet with examples of acute disorder, chronic ailment, general debility, premature decrepitude. Scarcely is there one to whom you put the question, who has not, in the course of his life, brought upon himself illnesses which a little knowledge would have saved him from. Here is a case of heart disease consequent on a rheumatic fever that followed reckless exposure. There is a case of eyes spoiled for life by over study. Yesterday the account was of one whose long-enduring lameness was brought on by continuing, spite of the pain, to use a knee after it had been slightly injured. And to-day we are told of another who has had to lie by for years, because he did not know that the palpitation he suffered from resulted from an overtaxed brain. Now we hear of an irremediable injury that followed some silly feat of strength; and, again, of a constitution that has never recovered from the effects of excessive work needlessly undertaken. While on all sides we see the perpetual minor ailments which accompany feebleness. Not to dwell on the natural pain, the weariness, the gloom, the waste of time and money thus entailed, only consider how greatly illhealth hinders the discharge of all duties-makes business often impossible, and always more difficult; produces an irritability fatal to the right management of children; puts the functions of citizenship out of the question; and makes amusement a bore. Is it not clear that the physical sins—partly our forefather's and partly our own-which produce this ill-health, deduct more from complete living than anything else? and to a

great extent make life a failure and a burden instead of a benefaction and a pleasure?

"To all which add the fact, that life, besides being thus immensely deteriorated, is also cut short. It is not true, as we commonly suppose, that a disorder or disease from which we have recovered leaves us as before. No disturbance of the normal course of the functions can pass away and leave things exactly as they were. In all cases a permanent damage is done—not immediately appreciable, it may be, but still there; and along with other such items which Nature in her strict account-keeping never drops, will tell against us to the inevitable shortening of our days. Through the accumulation of small injuries it is that constitutions are commonly undermined, and break down, long before their time. And if we call to mind how far the average duration of life falls below the possible duration, we see how immense is the loss. When, to the numerous partial deductions which bad health entails, we add this great final deduction, it results that ordinarily more than one-half of life is thrown away.

"Hence, knowledge which subserves direct self-preservation by preventing this loss of health, is of primary importance. We do not contend that possession of such knowledge would by any means wholly remedy the evil. For it is clear that in our present phase of civilization men's necessities often compel them to transgress. And it is further clear that, even in the absence of such compulsion, their inclinations would frequently lead them, spite of their knowledge, to sacrifice future good to present gratification. But we do contend that the right knowledge impressed in the right way would effect much; and we further contend that as the laws of health must be recognized before they can be fully conformed to, the imparting of such knowledge must precede a more rational living-come when that may. We infer that as vigorous health and its accompanying high spirits are larger elements of happiness than any other things whatever, the teaching how to maintain them is a

teaching that yields in moment to no other whatever. And therefore we assert that such a course of physiology as is need ful for the comprehension of its general truths, and their bearings on daily conduct, is an all-essential part of a rational education.

"Strange that the assertion should need making! Stranger still that it should need defending! Yet are there not a few by whom such a proposition will be received with something approaching to derision. Men who would blush if caught say ing Iphigenia instead of Iphigenia, or would resent as an insult any imputation of ignorance respecting the fabled labors of a fabled demi-god, show not the slightest shame in confess ing that they do not know where the Eustachian tubes are, what are the actions of the spinal cord, what is the normal rate of pulsation, or how the lungs are inflated. While anxious that their sons should be well up in the superstitions of two thousand years ago, they care not that they should be taught anything about the structure and functions of their own bodies -nay, would even disapprove such instruction. So overwhelming is the influence of established routine! So terribly in our education does the ornamental override the useful!" *

But it may be objected that the curriculum of our colleges is already over-crowded, and that the addition of so large a matter is not to be thought of.

Perhaps so. Yet the work of our colleges is to make men, not to weave lustrous shrouds for human wrecks. Colleges find their true sphere in fitting men for usefulness; and as for utility, you might as well brain a man with an Indian war-club upon his entrance to the college, as to send him forth upon graduation day, physically incompetent. It is infantile to urge that there is no such severity in any part of the course of instruction assigned, as shall place the health of the student in jeopardy, if he will but take care of himself. Of course he

^{*} Education. Herbert Spencer.

won't take care of himself. He is no better fitted to give himself physical training than mental training. He is not yet fit to be his own preceptor. The student comes to the college in the sap,—comes to be seasoned. He comes physically lacking. He comes flat-chested, spindle-shanked, but half-developed and out of shape. It is the plain duty of his Alma Mater to shape him up physically as well as mentally. It is true that a few of the larger institutions of the East are waking up to their duty and their opportunity in this matter. They are actually creating chairs of physical culture and hygiene. Wonderful to relate, in one of these schools, "one or two extra lectures are usually devoted to Stimulants, and Hygiene of the Reproductive Organs, and these subjects are still more fully presented, when desired, to the Gentleman of the Graduating Class." Our national military school has long been setting a fine example in this thing. That the course of study at West Point is severe and exacting, is well known. But the physical training is equally thorough. With this result. "The annual report of Gen. Merritt, Superintendent of the West Point Military Academy, gives a gratifying showing of the effect of the thorough physical training enforced there. During the past year there were about 350 cadets and officers at the Academy, but during that time no deaths occurred, and the percentage of sick to the command was only one-fifth of one per cent." But with rare exceptions, the colleges and universities of this country, however meritorious may be their theories, practically ignore physical education. The picture drawn by Dr. D. A. Sargent, of the chair of Physical Training at Harvard, is not exaggerated. He says, in a recent number of the North American Review:

"During the past few years the science of physiology and hygiene has made rapid advancement. The elementary laws of health have been more widely diffused and more intelligently followed by the people at large. The medical profession are trusting less to drugs and more to natural agents. Air, food,

sleep and exercise, when properly administered, are great remedies as well as great preventives of disease, and doctor and patient alike begin to realize this fact. Our houses are better ventilated, our tables more healthfully provided, our time for sleep is lengthened, outdoor games are growing popular, and our styles of dress have been perceptibly modified in favor of health and comfort. This spirit of the age is recognized by the governing bodies of our colleges and seminaries, who announce in the catalogues of their institutions that due attention is given to health and physical training. Parents are attracted by these announcements, and send their sons and daughters to college in the confident hope that they will receive physical as well as mental training and development. But their expections are seldom realized. The intelligent system of physical culture which they had been led to expect exists only in the imaginations of the trustees and faculty.

"It is true that nearly all of the larger seminaries and colleges in the New England and Middle States are provided with gymnasiums, or their students have access to some place for practicing physical exercises. In a few of these institutions light gymnastics are made a part of the curriculum, and are conducted under the eye of a capable instructor. The apparatus used consists of wooden dumb-bells, wooden wands and Indian clubs, which vary in weight from one to four pounds each. The movements are arranged in a progressive series, and are designed to call into gentle activity all the muscles of the body. The time allotted to these exercises varies from one hour to two hours a week, and extends over a period of from three to eight months. In some cases regular attendance is required for the first year only, in others it is kept up throughout the school or college course. The maximum of required gymnasium work in any institution is not over two hours a week, and in one instance it is but one hour a week for a single term. No one acquainted with the structure of the human

frame, or knowing anything of its natural requirements, will undertake to say that a half-hour four times a week devoted to muscular exercise is excessive, especially when the apparatus used is of the lightest description. Yet this is all that is provided in the way of physical culture by the corporation in the best of our literary institutions.

"A gentleman gives forty or fifty thousand dollars for the erection of a gymnasium. The planning is handed over to an architect, who has no idea of the kind of building required, but who feels it his duty to get up something that will at least be an ornament to the campus. He generally succeeds in doing this, and the donor and the corporation are satisfied. But what can be said of the structure, as to its fitness for a temple of health? It is a building eighty feet long and half as many wide, poorly lighted, heated, and ventilated. The bath-rooms are on one floor, and the dressing-rooms in the attic or cellar. The walls, roughly finished in brick or granite, are frescoed with dust in the summer and with frost in the winter. The floor is made of spruce, and its seams are filled with gravel. In fact, incongruity and unfitness meet us on every side and in almost every detail. Why should this be so, when the amount of money contributed is large enough to meet all demands, and the ground space allotted is ample? Because the architects and builders employed do not know the requirements of a good gymnasium, and seldom seek the advice of those who have practiced gymnastics for years, and have made a life-study of the subject. The result is an edifice not adapted to the work for which it was designed. Exceptions should be made of the finely constructed gymnasiums at Harvard and Princeton; nor would we judge too sternly those institutions which have been obliged to remodel an old building in order to have any gymnasium at all.

"Having put up a building, the authorities proceed to fill it

with apparatus made by the college carpenter. This is arranged for appearance' sake rather than for use. The material is selected without regard to fitness, and put together with little knowledge of its object or design. Hanging ropes are made of hemp, and stiffly tarred to make them durable. This object is effected, for they are never used twice by the same person. The parallel bars are broad at the base and narrow at the top, so as to render the grip insecure; and they are generally made of some splintering material, in order to remind the performer which way he is going. The trapeze is bolted to a beam in the highest part of the room, and left pendant twenty-five feet from the floor. Its bars are made of wood or iron, two inches in diameter, and, that the novice may have every opportunity of losing his balance, holes are made in the ends of each bar, the ropes put through and tied with knots underneath. The rungs on the horizontal ladder are three-quarters of an inch in diameter, and left rough, so that they may be firmly grasped, while in the vertical ladders they are smoothly polished. Both are carefully avoided, for, in the first case, every swing forward raises a blister; and in the second case, every step upward is attended with positive danger. The sand-bag weighs seventy-five pounds, and is covered with the heaviest kind of canvas. One solid blow removes the skin from every knuckle, and makes an impression that lasts for a life-time. This performance is never repeated. The matresses weigh four hundred pounds each, and are filled with excelsior, or corn-husks, which from constant rolling have become matted together in lumps. One had better land upon the floor than upon one of these cradle-knolls, for the former only occasions a little tingling of the feet, while the latter invar. iably causes a sprained ankle. The weights are neither boxed in wood, nor framed in iron; but they start from a trough filled with saw-dust and dirt. Every movement is accompanied by a cloud of dust and a deafening rattle and bang.

[&]quot;This is a fair representation of college gymnasiums through-

out the country. They are built without intelligent plan, filled with heavy, cumbersome, and in many cases perilous apparatus, and then left open to the hap-hazard experiment of all who choose to try them. With however good intentions of self-improvement a student may enter a college, he is disheartened at the outset by such a gymnasium as this. He finds no appliances adapted to his needs as a beginner, and no provision for progressive development. Constant assistance and direction are offered him in every branch of college work save this; here he finds nothing worthy of the name of instruction. * * *

So far as relates to the training of the mind, a system of required exercises has been universally adopted; but the training of the body has seldom been deemed of sufficient importance to merit like care and attention. We cannot but believe that this mistaken idea has arisen from a misconception of the real function of physical exercise, and of its powerful influence upon the system at large. So long as body and mind are kept in antagonism, and the demands of one thought to be prejudicial to the interests of the other, but little advancement can be made in physical education. But when it shall be generally known that the object of muscular exercise is not to develop muscle only, but to increase the functional capacity of the organs of respiration, circulation, and nutrition; not to gain in physical endurance merely, but to augment the working power of the brain; not to attain bodily health and beauty alone, but to break up morbid mental tendencies, to dispel the gloomy shadows of despondency, and to insure serenity of spirit; when man shall have learned that much of the ill-temper, malevolence, and uncharitableness which pervades society arises from feeble health, and that the great mental and moral disturbances which sometimes threaten the stability of a government may be traced to physical causes, then will the training of the body rival in dignity and importance the training of the mind, for the interests of mind and body will be recognized as inseparable. This time is coming,

though as yet some of our best and greatest thinkers, while admitting the value of physical exercise as an agent of health, still doubt the expediency of making it a department of educa-They argue that a college is designed to give a boy an intellectual training, and is in no way responsible for his health and physical welfare. But when we consider that it takes from six to twelve years for a boy to complete his education, that during this time he is almost constantly away from home, and that it is a period with him when the body is peculiarly susceptible to good or evil influences, it would seem that those under whose charge he is placed should have some intelligent care of his physical as well as of his mental and moral training. When boys come from the fitting school equally prepared in body and in mind for the duties before them, it will then do to talk of making our higher institutions of learning training schools for the intellect alone. But, while they are filled with students whose minds have been forced and 'crammed' in order to build a rep_ utation for masters and tutors; while class after class enters college well grounded in the classics and totally ignorant of the first principles of physiology and hygiene; while hundreds break down yearly for the want of physical stamina; while precarious health is the rule and a sound and vigorous constitution the exception, it is little less than criminal folly to talk of such a course. The body must be cared for, and when and how are the only questions open for discussion. If our preparatory schools were more generally patronized, and more liberally furnished with appropriate appliances, we should say that here was the field for physical training. But under present conditions the work, if done at all, must be done in college; and in college the first essential is to put this work on an equal footing with every other. If attendance at chapel or recitation is required, then attendance at the gymnasium should be insisted upon. Make this one of the stated requirements, and the student will look upon it as upon any other college duty. The

great majority of students are disposed to do what is thought to be best for them, and the complaint arises—when complaint is heard—from a failure on the part of the faculty or the managing boards to make provision for regular advancement in the exercises which they have introduced.

"To keep a class drilling from two to four years with wooden dumb-bells and Indian clubs only, is as great a mistake in a scheme of physical education as it would be to confine the same class exclusively to the study of geometry, with a view to giving them a thorough mental training. Such exercises are elementary in their nature, and in a prescribed course they should precede all others. But, after they have done their work, which is to supple the joints, rather than to develop the muscles, the student should be allowed to go higher. A change is necessary, not only to meet the demands of increasing strength, but to keep up an interest. The pupil must have something to look forward to, something to struggle with and to master. no place can a system of physical culture be carried out better than in a well-disciplined college. Before the freshman class begins gymnasium work every member should be examined physically, as he had previously been examined mentally, before entering college. Then, instead of putting all in one class, and adapting the prescribed exercises to the capacity of the weakest, grade the class according to the needs of its individual members, and arrange the exercises to correspond. Those with flat chests and consumptive tendencies should be put in one squad; those with weak backs and slender waists in another; those with strong bodies, but undeveloped limbs, in a third; and so on, until the whole class has been divided into squads composed of men of like capacity, and requiring similar treatment. The duration of this special training would, of course, depend upon the condition of each student, and should be left to the discretion of the instructor. After personal deficiencies have thus been corrected, the students should be transferred to the regular gymnastic class, and the members of this class should be led on from one piece of apparatus to another, until all the popular appliances of the gymnasium have been brought into service. By changing the course of instruction from term to term, and allowing some freedom of choice, a lively interest could be maintained which would add greatly to the benefit of the exercise. At the close of the first year the class should be examined in their work, and be grouped the next year according to their proficiency. The books of the director should be open to inspection, and the vital statistics of each man recorded at the beginning of the year could be compared with those taken at the close. such a system the physical condition of every student in college could be readily ascertained, and the value of regular and progressive exercise be put to the test. The course that we have described is essentially practicable, and we believe it to be the only one by which the gymnasium can be made to minister to the wants of all, and its exercises rendered educational.

"In looking over the whole field of physical sports and games we can find nothing so well adapted to the complete muscular education of youth as the exercises of a well-appointed, wellconducted gymnasium. Every variety of apparatus can be introduced, all the movements can be arranged in a progressive series, and the entire system can be adjusted to meet and remedy the physical defects of each individual student. times are ripe for action on this subject. Public thought is turning to it as never before. People are asking with growing earnestness, if nothing can help them to resist the destructive wear and waste of American business life. When insanity and the hundred forms of nervous diseases are on the increase, and when thousands of our educated young men are falling out in the battle of life for the want of strength and vigor, there is room for anxious questioning about our methods of physical training. Help must come from some source."

Ever since the days of ancient Greece has the gymnasium stood the test as a practical, efficient means of bodily culture. It is no new fashion yet to be put into the crucible of experience. It comes to us clothed in the hoary dignity of that departed past which it has outlived. In recent years it has had new and extended trial in the Young Men's Christian Associations. Their experience makes them its warm advocate. In the New York City Association, as many as 160 young men may be found under gymnasium instruction in a single evening. There are 900 dressing boxes in use by its members. The Chicago Association has over 1,000 young men practicing in its gymnasium. The Liverpool, England, Association has one of the best gymnasiums in the world. Nine months after it was opened, 870 young men were using it. The Superintendent of the gymnasium of the Boston Association, uses the following language in his last annual report: "We are doing the same kind of work only more of it, that we have been doing the past six years. Many have found that the 'ounce of prevention' is cheaper than the 'pound of cure,' and have learned to love exercise, and take it regularly. 'Hall of Health' has been a place of great good to our young men, who are full of life and power, and need to use it only to bring into play the parts of their body that their day's work failed to reach.

"We have had classes during the day and evening, and those who could not attend these, from any good reason, have been treated alone. We keep our members at work according to their ability and strength.

"The youngest member of our gymnasium is about ten, while the oldest is seventy-six years of age. The most important time to take physical exercise is between the ages of fifteen and twenty, and forty and fifty.

"We would like to mention a few of many cases of successful treatment of those who were sick. A man of about forty-

five years of age was reduced from the enormous weight of 232½ pounds, without clothes, to the respectable weight of 178 pounds. This was brought about by the daily use of the gymnasium about one hour each morning for the space of three months.

"A young man has gained twenty-five pounds by a year's faith ful practice. Another, who was sent by his medical adviser to be treated carefully for lung trouble, was examined by him after a few weeks' exercise, and symptoms of his disease could hardly be detected.

"Let us state, and be fully understood, that our gymnastic aim is to fit men for better work in life's battle by attending to our department of physical culture. There is no person, no matter what his daily work may be, who would not be made stronger and healthier by taking proper 'body-building' exercise."

It should be a matter of course that, whether in or out of colleges, gymnasiums, and all other means employed in the furtherance of physical education, be placed in charge of competent men. Unfortunately, what should be, is far from what is. Anybody or nobody is considered good enough to set up for a figure-head in this department. It is true, men competent to fill such positions are rarely found; but it is fairly urged that the reason for this is found in the absence of any demand for such men.

"We never recur to the enthusiasm with which Fræbel, Horace Mann, the elder Seguin and Canon Kingsley insist upon the role which physical education must bear in a system of education, without a feeling of some mortification that so many teachers are unconsciously making for it such a narrow sphere. It is divided up and assigned in the most accommodating way among those, who if others attempted to fill their special departments, with similar agility of preparation, would be loud in their cry of superficiality and incompetency."

^{*} Dr. Ezra M. Hunt, in an address before the Social Science Ass'n, Sept. 1883.

The present amount of mental work staked out for the four years' college course, need not be curtailed. The increased efficiency of the mind, when stimulated by a first-class physique, more than counterbalances the actual expenditure in minutes necessary for its attainment. Pliny avers that "the mind is stimulated by movements of the body," and Galen that "all the powers of the soul are increased and renewed by physical exercise." What but this rational best use of time does Gladstone mean when he exclaims; "Believe me when I tell you that thrift of time will repay you in after-life with a usury of profit beyond your most sanguine dreams, and that the waste of it will make you dwindle, alike in intellectual and in moral stature, beyond your darkest reckonings." Harriet Martineau says of Sir Walter Scott's education: "Here is a boy lying about in the fields, when he should have been at his Latin Grammar; reading novels when he should have been entering college; spearing salmon instead of embellishing a peroration. Yet this personage came out of this wild kind of discipline, graced with the rarest combination of qualifications for enjoying existence, achieving fame, and blessing society. Deeply learned, though neither the languages, nor the philosphy of the schools, made part of his acquisition; robust as a plowman; able to walk like a pedler; industrious as a handicraftsman; intrepid as the bravest hero of his own immortal works. Here is enough to put us on inquiring, not whether learning, and even school discipline be good things, but whether the knowledge usually thought most essential, the school discipline which is commonly esteemed indispensable, be in fact either the one or the other."

It would seem that if any mistakes are to be made, it were better that the error be over-liberality toward things physical, rather than things mental. Chancellor Kent tells this story of his own life.

"I was brought up among the highlands and hilly parts of Connecticut, and was never kept on the high pressure plan of

instruction. It was not then the fashion. I went to school, and studied in the easy careless way, until I went to college. I was daily, and sometimes for a month or more, engaged in juvenile play, and occasional efforts on the farm. I was roaming over the fields, and fishing, and sailing, and swimming, and riding, and playing ball, so as not to be but very superficially learned, when I entered college. I was not in college half the time. I was at home at leisure, or at gentle work, and much on horseback, but never in the least dissipated. I easily kept pace with my class, for it was in the midst of the American War, and there were no scholars or much stimulus to learn. Silent leges inter arma. When I went to study law, I had my own leisure, and great exercise and relaxation in enchanting rides, and home visits, until I got to the bar. I lived plaindrank nothing but water-ate heartily of all plain, wholesome food that came in my way-was delighted with rural scenery, and active and healthy as I could be. Here I laid the basis of a sound constitution, in which my brain had not been unduly pressed or excited, and only kept its symmetry with the rest of the animal system. It was not until I was twenty-four, that I found that I was very superficially taught, and then voluntarily betook myself to books, and to learn the classics, and everything else I could read. The ardor and rapidity with which I pursued my law and literary course, was great and delightful, and my health and spirits were sound and uniform, and neither has faltered, down to this day." Best of all, he was sixty-nine years old when he wrote these words. "Thus we are discovering," says Herbert Spencer, "the wisdom of the saying, that one secret in education is 'to know how wisely to lose time.'"

That the American disregard for the physical in education has reached its utmost limit, may not be a vain hope. It is stated that there has just been established in Balliol College, Oxford, a lectureship in bodily science, by a good Briton who has made the endowment five thousand

pounds. May the good example thus set become a beneficent "craze" on this side of the water, until the words of Horace Mann shall be to the student just as significant in the physical, as in the mental sense. "Lost, yesterday, somewhere between sunrise and sunset, two golden hours, each set with sixty diamond minutes. No reward is offered, for they are gone forever."

But, to many of us, school and college days are things of the past. For us the drill of the class room is forever ended, and any change in its methods cannot now directly affect us. "every person has two educations, -one which he receives from others, and one, more important, which he gives himself," says Gibbon. We must now look wholly to this self-education. We are fairly launched upon the sea of life, we are at the very zenith of our powers. We have learned in the school of endeavor, that most thorough of pedagogues, that genius without work is dead, that genius consists principally in the capacity for and the will to do a vast amount of work, to work steadily, uninterruptedly, objectively from one week's end to another, from one year's end to another. It makes no difference whether our work be in the field of literature, science, art, commerce, the professions, or politics—there is but one invariable rule determining the degree of our attainment. The measure of our capacity for work will be the exact measure of our success. I know of no exceptions whatever to this rule. Again, our capacity for work of any and all sorts, mental and physical, will be in direct proportion to our bodily vigor. There may be some exceptions, but they are only such as serve to emphasize the rule. "To the strong hand and strong head, the capacious lungs and vigorous frame, fall, and always will fall, the heavy burdens; and where the heavy burdens fall, the great prizes fall too." "All intellectual labor proceeds upon a physical basis," says Philip Gilbert Hamerton. "The greatest actors have been the hardest workers," writes Lawrence Barret. The

great men in all departments of the world's work have been so uniformly men possessed of immense physical power, that it seems a waste of time to cite individual cases in proof of the fact. Who needs to be reminded of the Bismarcks, the Gladstones, the John Brights, the Wellingtons, the Websters, the Choates, the Sumners, the Vanderbilts, the Blaines, and their vast resources of physical endurance? From Michael Angelo's Moses, down to our own President Garfield, the great in accomplishment have been the great in endeavor, and the great in endeavor have been the great in physique; and Richard Cour de Lion is lion-hearted because leonine in frame. Frail body, faint heart and faltering brain belong together in the very nature of things; while the lusty frame, the lion heart, the looming intellect are by nature a trinity, whose sundering always carries with it a suggestion of the unnatural and phenomenal. How grand is it to feel within one's self the presence of this mighty triumvirate, whose resistless power a whole world's frowning cannot crush! Buttressed brain and steellike sinew, and lion heart, what giant men ye build for usgreat in war, greater in peace, greatest in the hearts of their countrymen. Build us up also into this stature of perfect manhood, that we may indeed feel within ourselves, with each breath that we draw, with each step that we take, with each putting forth of masterful effort, that we are of the King's household.

Do you call this an idle prayer? Do you say that you were naturally a delicate child, or that you know your health to be permanently impaired, and that for you the planning of any work must needs be the prophecy of an aching head, a restless pillow, an exhausted body, with nerves unstrung? In all kindness let me tell you that you are talking childishly. That all this is nonsense. What! Is our life a half worn garment which can never be new again, and must we slouch shabbily through this life until clothed upon with immortality? From the time of the classic arena down to the plebeian circus of to-day, we have

had it thrust into our very faces by constant object lessons that the physical man is amazingly responsive to any demand made upon it for development in any particular direction, and lavish in rewarding any care bestowed upon its general condition. The acrobat has shown how joints will consent to do the impossible; the Chinese, how nature consents to little feet when she cannot have better ones; the Flat-head Indian, how she will consent to an altered shape of the dome of thought, without taking away the reason; the pedestrian, how a Rowell in the tread-mill can train his legs to render him incredible service; the man of letters, how a slender Bryant, swinging a chair about his head, can keep the pristine vigor of his powers clear up to the eighties; the statesman, how a Gladstone can match the wear of Court with the elixir of the woodsman's axe.

"Ah, but," you say, "did I live amid the green fields and forest shade of the country, all this were true.—

'God made the country, and man made the town, What wonder, then, that health and virtue—gifts That can alone make sweet the bitter draught That life holds out to all—should most abound, And least be threatened in the fields and groves?'

but I must live in the city, my work lies among the busy haunts of men, and under these artificial conditions of life I cannot hope to live otherwise than under constant physical protest."

I know that this is a popular notion. Is it true? It is one thing to leave the cares of a year's work all behind you within the city walls, and seek the annual rest in the quietude of fields and woods where, Emerson says, a man throws off his years; and quite another, to work the whole year round in the country. In centuries long past, Jehovah set His temple, and the center of the religious life of His chosen nation, within the gates of its chief city, and ever since, the advance of civilization has tended to the building of larger and larger towns; and civilization does not progress backward, for we read that that distinguished faith which lifted up the Patriarch of old to be the Father of all

the Faithful—the triumph of that very Christian faith taught pastoral Abraham to look for a city which hath foundations. I submit that, in the vast majority of cases, the farmer's wife is very much of a dispirited drudge; that the farmer himself, instead of being the elastic athlete, is a stiffened, logy drayhorse, passing through life with the clumping, stolid gate of an inelastic son of toil. His sanitary surroundings cannot compare with ours of the city. Our city water supply is not an artificial condition. Continually the target of expert chemists, and the subject of constant agitation, it is greatly better than the open well of the farmer, constantly liable to the most stupid pollution, into which no one ever thinks of looking, and which is the last place in the world to go for approximately pure water. Our city heating with steam, securing an equable temperature, in high ceilinged rooms, with its accompanying grate for luxury, which of necessity brings with it the best of ventilation safety-valves, is not an artificial condition, and is greatly to be preferred to the modern farmer's stove in low, small rooms. Our city systems of sewage are not artificial conditions, and though they may be defective, who would hesitate one moment as to the choice between them, and the abominations of slops and out-houses which degrade the ordinary farm-house. Our city markets, giving us the best which earth and air and sea can lay at the feet of man, are not artificial conditions. Who for one instant would compare them—their finest of meats, their choicest of vegetables, their completest assortment of fish and fowl, their wonderful fruits brought from every quarter of the globe, preserved, if need be, by modern art and science, their best of every thing-with the farmer's table and cuisine? While no one pretends to raise a question as to the superiority of city over country in intellectual opportunity. The fact of the matter is, we must get out from behind this sickly whine of artificial conditions, where we have been hiding as an excuse for our rickety city physique, and put the blame where it belongs. The fact of the

matter is, that, both in the mental and the physical, all the way from candy to Christianity, the city gets the best of everything.

But I hear you say, "This is all very fine, and a very ingenious argument, and it would all be true enough but for one thing which you have forgotten, and which alters the case entirely. You entirely forget and leave out of the account the most important factor,—the high-strung tension, the unceasing strain to which we are relentlessly put by the very fact of this flood of good things which is pouring in upon us without cessation,these social privileges which are but narrowly divided from an unrelenting exaction. Oh, the tension, the strain, morning, noon and night, day in and day out, week in and week out. It is this that condemns us to a rickety manhood and womanhood living under constant protest of physical inability. This one factor changes totally the result. There is no better way open to us. We must stagger along as best we may. This whole nineteenth century is rushing toward the insane asylum. This planet of ours will one day be but a collossal mad-house. Oh, the strain, the strain, the strain!"

Come with me to your music room. I lead you to a seat before the silent instrument. Ah, what a familiar and beloved place it is to which I have brought you. Here is the friend who always understands you, always knows you. Here is the friend who meets your lightest fancy, and is in perfect chord with your deepest grief. How you love its mute white keyboard, with its dark sentinels of the semitones. 'Tis but the signal of a finger, and it pours forth its wealth of matchless melody and heaven-descending harmony. Storm-tossed and tempest-driven on life's tumultuous seas, to this friend you fly for its "Peace be still"—for all harmony is the voice of God. And as the child crying in the dark at it knows not what, is comforted by the beloved and familiar mother-voice, so life and death, with all their agitation, are ever comforted by the divine voice of harmony. I ask you if you do not fear that this friend

will one day exhaust its store of harmony, and you tell me that the store increases with each prodigal giving. I ask you if this friend ever seems perturbed, and you glance at it standing silently before us, and tell me that to you it is the symbol of repose—of the quiet possession of power unlimited. Do you know the measure of the strain which gives this harp of a thousand strings its voice and meaning? The sum of the tension of its strings is twelve tons! And can you, in the presence of your inanimate friend, tell me that you must of necessity be out of tune, mentally and physically, because of the strain imposed upon you? If you do not stop to magnify it by adding up the aggregate of the year's demands, is the strain of any particular day so very great? There is physiological philosophy in the petition "Give us day by day our daily bread." What is the sum of the tension to which you are subject—you who are newly attuned, who have the tension of the yielding wires restored by the blessed sleep of each returning night? Does it exceed twelve tons? If you should take your grand piano and waltz it through over-heated parlors all night long, until its legs were rickety; and then, in evening dress, take it out into the winter morning, until its sounding-board be warped and cracked and ruined; and corrode its wires with vinegars and snap them with excesses, it would indeed be but a ruined heap of discords. But don't tell me that the strain upon the wires of the piano was too great. Don't tell me that the strain imposed upon the nineteenth century pianos—the very thing which makes them the noble instruments that they are-don't tell me that the strain imposed upon a nineteenth century piano, especially in large cities, is so great as necessarily to ruin it.

Don't talk to me about strains—Wellington did not break down. Don't talk to me about strains—Lincoln did not break down. Don't talk to me about strains—Grant and Lee did not break down. Don't talk to me about strains—Garfield did not

break down. Talk to me of physical law transgressed; willfully, when you knew better; ignorantly, when you did not know. Tell me that you are ready to do works meet for repentance, and we will sit down together, and together rediscover the laws of health; rediscover the way by which we may regain that long lost elasticity which wakes each morning full of an energy which, in view of the day's work, is as the war-horse neighing impatiently for the fray; which returns each evening "Not as the quarry-slave scourged to his dungeon," but with that victorious fatigue which triumphs in endeavor. There is no elixir of life like this, there is no subtle stimulant which for one poor hour can wing our feet like the high courage born in us of this conscious adequacy of manly strength. And I hold out the high promise of this physical El Dorado to every one, without fear that in a single instance I shall fail to make it good. In the words of Hon. Dr. George B. Loring, U. S. Commissioner of Agriculture,—" A strong frame is not, indeed, the inheritance of every man, but it is seldom that a wise and constant attempt to strengthen a weak one fails in its endeavors. I have known many a stooping and awkward youth become active, erect, and strong through a persistent determination to overcome his weaknesses. I have known many a young dyspeptic, many a young hypochondriac, restored to health and cheerfulness by out door exercise, and by gratefully and heartily receiving the food that was set before him. Nature gives great strength to those who devote themselves to her cause, and responds readily to every intelligent and honest appeal to her life- and healthgiving influences." I do not fear a single exception. I have yet to meet with a single individual working under protest, whose daily labor was a dread and a distress, -- I have yet to meet with a single one whose powers were not capable of-not addition—but multiplication.

In teaching you this multiplication table I shall have nothing

to say of medicines. My purpose is to show you how to avoid being driven to the necessity of using drugs. It is the physician's highest duty. Medicines never made one ounce of muscle, or bone, or blood. Medicine is medicine, not food. Medicine never added one pound to the impact of vital force. Medicine only attacks the morbid force at work in the economy; and when that is conquered, the vital forces, not medicine, build the economy up to its pristine vigor. The work of medicine is always that of attack. It must attack and destroy the morbid element at work. Hence drugs are always destructive, not constructive. The constructives are the bath, rest, fresh air, food, sleep, exercise. Now while your physician may give you much aid in getting out of the mire into which you have sunk, it is manifestly unfair to expect him to do all the work, or the largest share of the work, of setting your feet upon a rock and keeping them there. You cannot manufacture health out of prescription blanks. In all schools of medicine in all ages, the foundation maxim has been, "Tolle causam"remove the cause. To enlarge the knowledge of causes is the great work of medicine to-day. Just so long as any indictment may fairly be drawn up against you for violation of the laws of health, just so long will your shortest and only certain road to health be through—not the drug store—but through obedience to those laws. Just so long as you allow yourself to be, in common parlance, "run down;" just so long as physically and therefore in your totality, you may be fairly quoted as below par, just so long have you no right to expect that the contents of a wholesale drug house poured down your throat will bring you back to the standard of health. The guilty cause, your own failure to take decent care of your physical self, is still at work. Tolle causam-remove the cause. Take the same intelligent care of yourself that you would of the ten thousand-dollar horse in your stable, and the prompt return of boyhood elasticity will be at once a surprise and a delight. Ponce

de Leon was right. There is a fountain of perpetual youth and bloom, but its name is not to be found among the labels of any drug store or pharmacy. The fountain of perpetual youth is within you, and if you will but take the pains to see to it that the rubbish of each day's work be not allowed to fall into and choke this ever-flowing spring of new life, you shall day by day "renew your strength, you shall mount up with wings as eagles; you shall run and not be weary, you shall walk and not faint;" and before ever you are aware that the evening draweth nigh, shall you feel upon your brow the "breath of the eternal morning."

It is impossible to survey the precise path for each individual, by which this effectiveness of perfect vigor shall be attained, setting thick the stakes of thou shalt and thou shalt not, and saying, this is the way, walk ye in it. Yet as the laws of vital force are everywhere the same, and as the individuals who make up the great human family are characteristically alike in their neglect of physical culture, no matter what their work may be, it will be to the purpose to take up in detail a few of the neglected, fundamental duties; which at the same time will serve to illustrate the underlying principles. A reasonable observance of these duties will so nearly accomplish physical redemption that any necessary additions can easily be made by each individual to suit any peculiarity of circumstance.

The value and neglect of the bath have been considered in the previous chapter. Too great emphasis cannot be laid upon its importance. Surgeon Hamilton, of New York, pithily says that "dirt, debauchery, disease and death are links of the same chain." In his work on "Training in Theory and Practice," Maclaren, of the Oxford Gymnasium, remarks: "Bathing must be viewed as an agent of health in two distinct aspects: first, in its capacity as a cleanser of the skin, and secondly, as an agent of considerable tonic power. In its first aspect it addresses the skin as the organ of transpiration only;

in the second, as the organ of common sensation, possessed of great nervous sensibility and influence. In the first, it addresses the skin with the view of removing from it all impediments to functional ability, and arousing it to greater activity; in the second, it acts directly through the skin upon the nervous and circulatory systems." The bath is to the man what oil is to machinery.

Rest is of two kinds. The conscious rest when we turn the key of store or office at the end of the day's work, not to again take up that work until the succeeding day, or when we take a few days' annual vacation from work; and the unconscious rest in sleep. Of the first it is only necessary to remark that the whole science of the successful taking of this rest is found in the utter repudiation of all thoughts in any way related to business, be that business what it may. The man whose home-face is the barometer of the day's business, is liable to break down any day. The clergyman who preaches in vacation, the professor who has an eye out for "the college" all through the summer's pseudo-rest, the man of business who calculates the probable returns of an investment in the vicinity of his lake-side retreat, are all defrauding those for whom they labor. He who allows his work to be his overseer, with the crack of the whip perpetually sounding in his ears, will come to be but a slavish sort of workman at last. While he whom the night's encampment makes eager for the fray, is very near the best possible performance.

"Should it be necessary to say a word about sleep? One would think not. Nature, we may imagine, is sufficient for herself in this matter. Let a man sleep when he is sleepy, and rise when the crow of the cock, or the glare of the sun, rouses him from his torpor. Exactly so, if Nature always got fair play; but she is swindled and flouted in so many ways by human beings, that a general reference to her often becomes a useless generality. In the matter of sleep especially students are

great sinners; nay, their very profession is a sin against repose; and the strictest prophylactic measures are necessary to prevent certain poaching practices of thinking men into the sacred domain of sleep. Cerebral excitement, like strong coffee, is the direct antagonist of sleep; therefore the student should so apportion his hours of intellectual task-work, that the more exciting and stimulating brain exercise should never be continued direct into the hour for repose; but let the last work of the day be always something comparatively light and easy, or dull and soporific; or better still, let a man walk for an hour before bed, or have a pleasant chat with a chum, and then there can be no fear but that Nature, left to herself, will find, without artifice, the measure of rest which she requires." *

True of Scottish students, these words are equally applicable to Americans of all pursuits. Even locomotives must have rest. Loss of sleep is the first step toward the insane asylum. Sleeplessness means physical and mental ruin. Insomnia is to the nervous system what the cruel, rock-ribbed reef is to the ship, -destruction, despair, death. Nine hours' sleep is no rule of safety for us. To sleep from midnight until nine o'clock the next morning is by no means the equivalent of the. sleep from nine in the evening to six o'clock in the morning. It makes all the difference in the world where you put those nine hours. Without attempting to spin theories which shall be more or less cunning guesses why it is that the early hours of the night are the most valuable for sleep, it is well that we accept the fact from our own unbiased observation and experience, and systematically order our sleep in conformity thereto. It is not necessary to know exactly why, when we go to bed at twelve and sleep until nine o'clock the next morning, we arise with every energy departed and every faculty weakened. all know it to be the fact, and can accept the undisputed without wasting time on hypotheses. It is when we "go to bed

^{*} Professor John Stuart Blackie.

with the chickens" that early rising begins to be a virtue. It has been wittily said that "early risers are conceited all the morning and stupid all the afternoon." That is true only of those who attempt the impossible God-and-Mammon service of late hours in the evening and early hours in the morning. Pestalozzi declared that "children, stinted in their sleep, are never wide-awake;" and "men are but children of a larger growth." It is true only of those who dedicate the night to its legitimate use, that "Heaven trims their lamps while they sleep." The advice of Maclaren is based upon a normal bedtime. would," he says, "urgently recommend the man in training to rise early. To him who would build up his body in health and strength, this will be the corner-stone of the edifice. There is in the morning air an invigorating freshness which is sought in vain at any other period of the day. There is an absolute sensational pleasure in the act of inhalation of the external air in the early morning, quite special and peculiar. And let him not only rise early, but do this and rise the very first instant he The fact of his being awake shows that the full recruitment of his frame has been accomplished; that bed can do no more for him, and that after this, every hour passed in the air of the sleeping-room is a serious loss, for in one hour every drop of blood in his body will have many times passed through his lungs, and have been subjected to the air inspired, be it pure or impure. Let him never forget this. The instant that a man is awake, let him get out of bed; and the instant that he is out of bed, * * * let him open his windows to their fullest extent; thus giving to his apartments and their furnishings what he gives to his body by the agency of water; for these two agents of health should ever go hand-inhand, fresh Air and fresh Water."

Sleep at the proper time and in proper quantity is an absolute necessity if you are to be a genuine man. "The president of one of the largest banks in this country told the writer that, disappointed one summer in not getting a run to Europe, reflection told him that one marked benefit such jaunts had brought him was from the increased sleep he was enabled to get, that thereupon he determined on longer sleeps at home. He got them, and found, as he well put it, that he could 'fight better.' Beset all day long with men wanting heavy loans, that fighting tone, that ability to say 'No' at the right time and in a way which showed he meant it, must have not only added to his own well-being, but to the bank's protection as well." *

"But," some one says, "I cannot sleep. Wakefulness is my relentless, ever-haunting tormentor." That is because you have transgressed in other directions. By the observance of the bath of which we have already spoken, and of the exercise of which we shall speak in a moment, sleep will come if you but give it opportunity. "Benjamin Franklin proposed to prevent colds, and even small-pox, by air-baths, and found that he could relieve insomnia by simply removing the bedclothes for a couple of minutes. 'I rise early almost every morning,' says he, 'and sit in my chamber without any clothes whatever, half an hour or an hour, according to the season, either reading or writing. This practice is not the least painful but, on the contrary, agreeable, and if I return to bed afterward before I dress myself, as it sometimes happens, I make a supplement to my night's rest of one or two hours of the most pleasing sleep that can be imagined." "

It is imperative that we return to the ways in which our fathers walked all the days of their lives, that, early to bed and early to rise, we may be powerfully equipped for our work. We cannot afford at any price to sell our birthright to the sacred hours of sleep. Sleep, which is at once the image and the ene my of death. Sleep, with its life-giving power, a bestowment from Him whose gift is life eternal.

^{*} How to Get Strong. Blaikie.

"Sleep, that knits up the ravelled sleeve of Care,
The death of each day's life, sore labor's bath,
Balm of hurt minds, great Nature's second course,
Chief nourisher in life's feast."

It makes all the difference between life and death, whether the organism be fed upon its proper foods, or upon poison. But how many would think of giving a significance to this statement, beyond the foods found upon our tables, and the liquids ordinarily swallowed? Yet there is a pabulum supplied the organism eighteen times a minute, day and night, without interruption. How much care do you take that this shall be the best of food, and not poison? How carefully do you guard against adulteration of that food of which you consume most? "Be it remembered that man subsists upon the air more than upon his meat and drink; no one can exist for an hour without a copious supply of air," says Thackeray. "Disease is a hothouse plant," says Haller. "This gas (carbonic acid), created by breathing the air, destroyed the lives of 123 persons in eleven hours, in the 'Black Hole' of Calcutta, in the year 1756. Many millions of human beings have lost their lives from the same cause since the date of this occurence; yet not always in so short a space of time. Forty out of every one hundred die of impure air: of this number it is fair to estimate that twenty die directly or indirectly from the influence of carbonic acid gas, as the result of over crowding, and of badly ventilated rooms," says Surgeon Frank H. Hamilton of New York City.

"On the day of judgment God will perhaps pardon you for starving your children when bread was so dear; but, if he should charge you with stinting them in his free air, what answer shall you make?" says Jean Paul. And yet we are strangely negligent in providing an unlimited supply of fresh air. Take our sleeping-rooms. We push the bed off into a corner and then open a window at the other side of the room. As though in

this manner we could get anything like an adequate supply of fresh air. If we would roll the bed out into the center of the room, and take off the high head-board, so that we could have the free air flowing all about us, there would be less complaint of headaches, and of "waking tired." The writer has bright memories of a summer whose refreshing sleep was on the lawn, with nothing but a little French shelter tent, open at both ends, between him and the stars. "Open your windows at night. Night air is seldom, if ever, so poisonous as your own breath," again urges Dr. Hamilton. This fear of the night air is absurd. As though the Creator would poison His children while they sleep. Drafts are altogether another matter. They mean the exposure of a limited portion of the surface to cold, lowering its temperature and destroying the equilibrium. And this means a "cold." When the great atmospheric sea flows all round you, fear it not: but

"If the wind strikes you through a hole, Go count your beads and mind your soul."

Professor Blackie speaks earnestly to students of the necessity for fresh air. "I believe there are few things more necessary than to warn students against the evil effects of close rooms and bad ventilation. Impure air can never make pure blood; and impure blood corrupts the whole system. But the evil is, that, no immediate sensible effects being produced from a considerable amount of impurity in the air, thoughtless and careless persons—that is, I am afraid, the great majority of persons go on inhaling it without receiving any hint that they are imbibing poison. But those evils are always the most dangerous of which the approaches are the most insidious. Let students, therefore, who are often confined in small rooms, be careful to throw open their windows whenever they go out; and, if the windows of their sleeping-room are so situated that they can be kept open without sending a draught of air directly across the sleeper, let them by all means be left open night and day, both summer and winter. In breezy Scotland at least, this practice, except in the case of very sensitive subjects, can only be bene ficial. In hot countries, where insalubrious vapors in some places infest the night, it may be otherwise."

In our latitude, where the artificial heating of our houses is so large a necessity, the question of pure air cannot be considered without recognizing the problems surrounding heat and ventilation. A few terse sentences from Dr. Hamilton must suffice.

- "Radiated heat is better than heated columns of air. The sun, and an open fire-place or grate furnish radiated heat.
- "Hot-air furnaces, with registers opening directly into the rooms, supply only heated columns of air; which are generally dry and impure. Rooms thus warmed are first and most heated near the ceiling.
- "Air heated by red-hot, or very hot iron, is rendered in a great measure unfit for respiration.
- "It requires ten degrees more heat to keep warm in a close room heated by burnt air, (from hot-air furnaces, close stoves, &c.), than in a well-ventilated room, heated by radiated heat (from an open fire-place, &c).
- "Pure air kindles and sustains a fire within the body. This internal fire is, however, quickly extinguished by carbonic acid (manufactured in breathing.)
 - "Debit and Credit account of hot-air furnaces:
- "Cr. No smoke; no dirt; less labor; an atmosphere throughout the house, especially during the day, causing a sense of languor, and encouraging repose and sleep.
- "Dr. Disturbed sleep at night; colds; coughs; croup; consumption; debility; nervousness; irritability; neuralgia; headaches; vertigo; weariness; general loss of health; loss of beauty; loss of life; doctor's bills."

In a paper read before the New York Academy of Medicine on "The Struggle for Life against Civilization, Lux-

ury and Æstheticism," Dr. Hamilton says; "I repeat then, that in order to render pure and innocuous the atmosphere of our houses, whether the sources of its impurity are to be found in our present systems of lighting, heating or drainage, it will be necessary first of all that civilization should make some concessions.

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"First. That all plumbing having any direct or indirect communication with the sewers, shall be excluded from those portions of our houses which we habitually occupy. In other words, that it shall be placed in a separate building or annex.

"Second. That we return to the open fire-place, or the grate, as a means of warming our private houses.

"Third. A diminished consumption of oxygen by gasburners. It is still an open question, whether we shall be able to light our dwellings with electricity; but so long as we are obliged to depend upon gas we must content ourselves with light, and not insist upon illumination."

There is no single subject relating to health upon which mankind is better informed than that of food. More than that, the American nation is wonderfully well fed. As a people we are well informed as to what constitutes good food, and better yet, we are so well-to-do, that we can afford to place good food upon our tables. And while there is room for some suggestion so long as humanity will persist in consuming pickles by the hogshead and buckwheat by the car load, yet we will pass by the question What shall we eat? because we are sufficiently well informed for all ordinary purposes. Yet it does seem a pity, when the Lord has given us so many things which are really good to eat, that we should fill our stomachs with such miserable fare as green cucumbers and buckwheat cakes. It is a great mistake to regard our digestive apparatus as a sort of stonecrusher, intended for the grinding of any substance which may be fed to it; not standing the test as a good machine should unless it dispose of the most refractory substances without complaint; its destiny unfulfilled unless kept constantly at work. But we make greater mistake in our manner of eating, than in the quality of our food. Not that I would raise the old cry against water while eating. Drink if you care to. Nor yet indulge a harangue on the need of more careful mastication, though it is reasonable to ask that the process of solution be aided by a fair subdivision of the solid substance. But it must be insisted upon that a leisurely, contented spirit is a prime requisite of a successful meal. If you bring the weight of business cares and the incubus of business schemes to the table, you offer a premium to dyspepsia. Hurry means hot head, cold feet, heavy stomach. Be a parliamentarian. When your head has the floor, do not allow your stomach to be interrupting it by wondering what it is to have for dinner, and so retard one-half the rapidity and efficiency of the work done by that head. And when your stomach has lawfully obtained possession of the floor, or rather table, don't let it be diverted from the business in hand, by constant questions from the head as to the order of business for the afternoon. Call the house to order, keep the house in order, give an equal opportunity for doing good work to both the committee on nutrition, and the committee on ways and means. If you don't, my word for it, you will receive minority reports from one or both which will cause you no small annovance.

Don't try to do two things at once. Distraction is as bad in dining as in book-keeping. A great many hundred years ago King David said, "My tears have been my meat day and night." Why, the old man couldn't have done better had he lived in the broad light of the nineteenth century. If the grand old patriot felt as bad as that about it, he did just right not to eat anything. Had he eaten anything, what could he have expected except an attack of indigestion which would have made things just so much the worse as the depression of physical disorder is worse than the depression of mental perplexity.

No doubt when, at last, he dried his tears, he ate a good square meal and enjoyed it, and had no twinge from below the diaphragm after it Follow his worthy example. If you must have tears, by all means let them be your meat and drink,—if you must have the blues, by all means make them your meat and drink,—if you must have business schemes which absorb you body and soul, by all means make them your meat and drink too. And it won't be long before you will come down your little tree like a man, and eat your dinner with gladness and singleness of heart; and it will bring no sorrow with it. Spread your bread with butter, and not with tears or blues or schemes. One thing at a time. No matter how many things may crowd into your day, one thing at a time. Give to your dinner the time its importance merits. And do not start off down town at a rapid walk, or turn at once to your work the moment you rise from the table. Everybody knows that immediate mental work conflicts with the process of digestion. not everyone is aware that physical exertion is equally prejudicial to the proper utilization of the food taken. Jules Virey demonstrated this by careful experiment. "He selected two curs of the same size, age, and general physique, made them keep a fast-day, and treated them the next morning to a square meal of potato-chips and cubes of fat mutton, but, as soon as one of them had eaten his fill, he made the other stop too, to make sure that they had both consumed the same quantity. Dog No. 1 was then confined in a comfortable kennel, while No. 2 had to run after the doctor's coach, not at a breathless rate of speed, but at a fair, brisk trot, for two hours and a half. As soon as they got home, the coach-dog and his comrade were slain and dissected; the kennel-dog had completely digested his meal, while the chips and cubes in the coach-dog's stomach had not changed their form at all; the process of assimilation had not even begun." At the very shortest, half an hour for the meal; at the very shortest, half an hour after eating for

that siesta marked by the cessation of all effort, the period of passive satisfaction which follows the normal performance of every function known to the organism. Then a gradual starting of the wheels of work again. He is a poor engineer indeed, who starts his engine with a jerk.

But in importance towering over all other agencies employed in the attainment of physical culture, and occupying a bad preeminence in frequency of neglect, stands exercise. The appliances of civilization, from the printing-press to the elevated railway, all increase the demand made upon one's nervous and intellectual systems, and at the same time diminish the calls for physical exertion in business pursuits. Every electric wire stretched between two poles, intensifies the head-work and lessens the hand-work of business. Edward Everett Hale speaks of it as "the civilization under the tyranny of the telegraph, the ail, the telephone, and the door-bell." The calls upon our time are so incessant, remorseless, imperative, that we give up the idea of systematic exercise as being wholly out of the question. We absolutely "haven't time". Succumbing to what we are pleased to consider the inevitable, we respond to the calls for intellectual exercise made unceasingly from morning till night, and neglect to render unto our physical man the things which belong to it, because its demand is not pressed so importunately, until we begin to lose our physical balance.

The head grows hot, the feet cold, the sleep disturbed, the stomach cranky, the bowels constipated, mental work becomes a rasping drudgery because of the frictions in the physical machinery—yet we run on recklessly until we "break down," the unconfessed victims of our own blindness and folly.

"Though the mills of God grind slowly, yet they grind exceeding small; Though with patience he stands waiting, with exactness grinds he all."

Our years of ripest usefulness are before us, yet we come to these years almost wrecks; and whatever we succeed in accomplishing must be done under protest and in weakness, instead of in the manly strength which should be ours. It is painful to note the extent to which the work of American scholars and American business men is done in physical distress. How refreshing is it to meet, occasionally, with such an exception to this rule of physical weakness, as that good methodist bishop, whose physical presence was thus described in a tribute of rhyme at his golden wedding a short time since.

"Throughout the land his works do praise him;
It took a dozen states, at least, to raise him;
His Titan limbs of stalwart brawn consist,
And every inch a loyal Methodist.
His spinal column, never known to lurch,
In times of pressure can hold up a Church.
His ample breast (excuse the seeming boast)
Is broad and generous 'as the Pacific Coast.'
The seat of power, as wide as you may make it,
You need not doubt he'll fill the chair, or break it."

The solid worth of a good physique and the endurance which such a physical balance brings with it, was well set forth in an address of Professor Huxley's to the prize-winners at a university contest. He said: - "So, boys, let me tell you that it has given me great pleasure to come among you to-day, and to hand you the prizes you have won for proficiency in all sorts of intellectual, and some physical exercises; and, as I have perfect confidence in the judgment and in the justice of those who award these prizes, I am sure that you deserve the honors you have obtained, and I offer you my hearty congratulations upon them. You have a right to take an honest pride in your success, and I would even excuse a little vanity, if the fit is neither too strong nor too long. But though self-satisfaction, if one comes by it honestly, is a very good thing in its way, the whole value of success, here as elsewhere, does not lie in self-satisfaction. the present case I should say that the chief value of success lies in the evidence which it affords of the possession of those faculties which will enable you to deal with those conditions of human existence into which you will be launched, to sink or swim, by and by.

"Let me appeal to your knowledge of yourselves and of your school-fellows. What sort of fellows are those who win prizes? Is there in all the long list which we have gone through to-day the name of a single boy who is dull, slow, idle, and sickly? I am sorry to say that I have not the pleasure of knowing any of the prize-winners this year personally—but I take upon myself to answer, Certainly not. Nay, I will go so far as to affirm that the boys to whom I have had the pleasure of giving prizes to-day, take them altogether, are the sharpest, quickest, most industrious, and strongest boys in the school. But by strongest, I do not exactly mean those who can lift the greatest weights or jump farthest—but those who have the most endurance. You will observe again that I say take them together. I do not doubt that outside the list of prize-winners there may be boys of keener intellect than any who are in it, disqualified by lack of industry or lack of health, and there may be highly industrious boys who are unfortunately dull or sickly; and there may be athletes who are still more unfortunately either idle or stupid, or both. Quickness in learning, readiness and accuracy in reproducing what is learned, industry, endurance, these are the qualities, mixed in very various proportions, which are found in boys who win prizes.

"Now there is not the smallest doubt that every one of these qualities is of great value in practical life. Upon whatever career you may enter, intellectual quickness, industry and the power of bearing fatigue are three great advantages. But I want to impress upon you, and through you upon those who will direct your future course, the conviction which I entertain that, as a general rule, the relative importance of these three qualifications is not rightly estimated, and that there are other qualities of no less value which are not directly tested by school competition. A somewhat varied experience of men has led

me, the longer I live, to set the less value upon mere cleverness; to attach more and more importance to industry and to physical endurance. Indeed, I am much disposed to think that endurance is the most valuable quality of all; for industry, that is the desire to work hard, does not come to much if a feeble frame is unable to respond to the desire. Everybody who has had to make his wav in the world must know that while the occasion for intellectual effort of a high order is rare, it constantly happens that a man's future turns upon his being able to stand a sudden and a heavy strain upon his powers of endurance. To a lawyer, physician, or a merchant it may be everything to be able to work sixteen hours a day for as long as is needful without yielding up to weariness. Moreover, the patience, tenacity, and good humor which are among the most important qualifications for dealing with men are incompatible with an irritable brain, a weak stomach, or a defective circulation. If any one of you prize-winners were a son of mine and a good fairy were to offer to equip him according to my wishes for the battle of practical life, I should say, 'I do not care to trouble you for any more cleverness; put in as much industry as you can instead; and oh, if you please, a broad, deep chest, and a stomach of whose existence he shall never know anything.' I should be well content with the prospects of a fellow so endowed."

Such testimony to the value of physical endurance, carries with it great weight, coming as it does from one whose opportunities for observation have been the best, and who, at the same time, is removed from that suspicion of an undue bias engendered by long study of the physical man, which so often discounts the utterances of the physician.

In the whole list of illustrious men who, in the accomplishment of their Herculean tasks, have found a tower of strength and effectiveness in their own nobly-built bodies, no one stands

nearer to our thought than James A. Garfield. During the long weeks through which the wounded man battled for his life, we learned much of his physical nobility which had before been unknown to us. But I would not draw any conclusions from those tragic days as to the value of an iron physique: for you and I trust that we shall be spared just such a call as was this, for an oaken frame. I would draw the lesson from the military career, where the real burden of work and responsibility is hidden from the public view; the long years of public service in state and national halls of legislation, where the real work, and it is piled mountain high, is not on the floor of house or senate making speeches, but in the committee room, and a thousand other places, wholly concealed from public gaze. It was he who said, "Battles are never the end of war, for the dead must be buried, and the cost of the conflict must be paid." So is it in the daily battle of life. If our dinner does not pay the cost of the morning's conflict, or if our night's sleep does not bury the dead of the preceding day's battle; if each day's transactions show a debtor balance in the physical expense account, then are we piling up a war debt which we cannot repudiate, no matter how slyly we may say to ourselves that we mean to do so, and which will some day compel payment with either our lives or our usefulness. Then are we carrying on a business which will end in bankruptcy just as certainly as double entry bookkeeping gives a correct statement of our condition.

Nor does our loss of the proper physical balance wait to show its repugnant symptoms until we have reached middle age. President Eliot of Harvard, said, a few years ago, of a majority of those coming into that university, that they had "undeveloped muscles, a bad carriage, and an impaired digestion, without skill in out-of-door games, and unable to ride, row, swim or shoot." Yet the prevalent opinion is amazingly unanimous that, if the student at college should receive the physical training which alone would make him a symmetrical man and give

him that even physical poise insuring, not only mental balance as well, but also mental freshness and vigor, his scholarship must inevitably suffer thereby. How universal is the belief that the college boy who pulls an oar, or swings a bat, or kicks a foot-ball, does nothing but that, and is altogether ignorant of the Greek verb, conic sections and metaphysics. And yet I am sure that a little investigation of the facts in the case would convince the most prejudiced that such is not the result.

While I would not have every student a professional oarsman, nor every proud participant in "Junior Ex." a professional athlete, I do greatly regret that the percentage of our college boys who take part in the college athletics, is so small. being willing to take the extremest ground which an opponent could ask me take, and stake the issue upon the college boating of to-day—which in reality is only a single branch of athletics, but is that branch popularly supposed to be most unfavorable to scholarship-I wrote one of Yale's best oarsmen, whom I had known from boyhood up, and whose success at the oar I knew had not been purchased at the expense of his Homer, asking him to give me some account of college athletics, their regimen, and their effect upon the mental as well as the physical make-up. I take the liberty of inserting his reply, though it was intended for my eye alone, and not written with any thought of its publication.

NEW HAVEN, CONN., October 23d, 1882.

My Dear Doctor:—Yours of the 17th turned up here yesterday and I take the first opportunity to answer. As I am warmly interested in all of our athletics, and in rowing in particular, it is always pleasant for me to write or talk about them, and I am always glad to see information in regard to the subject become a little more general. However, I think I can only promise you to give you what facts I have as to the subject, leaving to you the task of getting them into the form you desire if they are such as may be of use to you. The facts are, a "victorious athlete and good student" has very little time to spare, and just now I am trying to be just that. Moreover, knowing nothing as to the general character of your production, the character of your audience, and the connection which this part bears to the rest of what you have

to say, I should need much more self-conceit than I now have, to think my performance would not be an utter failure.

Of course you must know that there are among college men perhaps more systems of training than there are colleges. The facts seem to be, that until recently even professionals have really known next to nothing on the subject, while the knowledge of college men, derived from sort of traditional ideas as to what professionals would do in the same circumstances, has been practically of no use. Lately, however, the best professionals have given up their old ideas as to feeding men on raw beef, without enough water to satisfy a child, and have adopted what might be called a common sense theory which amounts to just this: a man may eat any good wholesome food, having plenty of variety, eating what he pleases and as much as he pleases so long as it is nothing positively hurtful, such as pastry and things of that character.

In this question of diet the colleges have followed this example, and are now perhaps inclined to be a little too loose in their system.

In this question of diet there is a difference in the different branches of athletics, also. Rowing requires more endurance than either foot-ball or base-ball, and so here they are more strict. Foot-ball comes next, and in base-ball there is very little restriction.

Of course you will realize that it is practically impossible to regulate the diet of from ten to fifteen men (these are the numbers we keep for our teams), unless the men are together. This makes a training table necessary, where the men all board together. The time for which this is kept up varies according to the length of the season of each branch of athletics, being perhaps a month in foot-ball, and the last term, in the case of rowing and base-ball.

Besides this, the rowing man is expected to be careful as to matters of diet at least all the time after the Christmas vacation.

From what has been said as to the principle on which this dieting is carried on, you may get a very correct idea as to the bill of fare. The base-ball work is not severe enough to create in the men a desire for much more than the ordinary quantity of meats and solid food. Foot-ball is harder work, and therefore the food consumed must be more substantial, and probably greater in quantity than is ordinarily the case.

Rowing is the most severe exercise—so severe, that in my own case I have often noticed a loss of three pounds, by actual weight, during a practice row of five or six miles, while I have quite frequently exceeded this—and therefore men require plenty of the best meats, steaks, chops and roast beef being the favorites, three times a day.

Perhaps smoking, drinking, etc., come in this connection as well as anywhere else.

The base-ball team do not object to moderate smoking, and a glass of ale,

or something of that kind occasionally, though they, of course, forbid any intemperance in either way which would unsteady a man's nerves and unfit him for the excitement of a hard game.

Foot-ball is more strict, and during strict training forbids all use of tobacco, and all drinking.

Rowing also makes this rule. In the fall the rowing men may indulge somewhat, but for the last six months they are expected to give up such things entirely. Ale may be given rowing men to keep them from over-training, but they are to take nothing of the kind unless it is put on the training table for them by the proper authority.

All improper intercourse with women is strictly prohibited in all athletics during training.

The hour for retiring is fixed in all the various teams, and is adhered to strictly in rowing, with less strictness in foot-ball, while there is still greater laxity in base-ball. The rule is generally to be in bed by eleven. As the work grows harder, and the event, whatever it may be, comes nearer, the men need and take more sleep. I myself often sleep from half-past nine till seven, after a hard row in the spring.

I believe I have taken up everything except the actual work, though something may be omitted.

The foot-ball season is in the fall, ending at Thanksgiving, and so it is natural to take that up first.

It is self-evident that the contest for which you are working determines the amount of training to be done. One of our Rugby foot-ball games is in two innings of forty-five minutes each. Therefore, in preparing for such games, the purpose is to play every day a little longer than the time required for a regular game. It is thought that this is as much as is necessary for acquiring the skill that must be obtained, and that it will give the men the endurance required for a game. It amounts to an hour and a half of hard running and scuffling. Besides this, in the gymnasium the men are given a fast run of perhaps a mile and a quarter, with frequent spurts, to give them good wind.

This is the regular daily work. On Wednesday and Saturday, as often as possible, a game with an outside team is arranged, as this is the best kind of preparation. In the daily work the university team practices against a team taken from the other players in college, approaching as nearly as possible to a regular game. On the day before an important game the team are allowed to rest. If the team go away to play a game, they are kept quiet in the hotel until the time for playing, to keep them in the best possible trim.

I think that the training in the other large colleges is substantially the same as in ours. As we have lost but one game in five years, we do not feel the necessity of any change as yet.

From Thanksgiving till Christmas the base-ball and foot-ball men have a vacation.

As soon as the college assembles after the Christmas vacation, the base-ball training begins. During the winter they are of course confined to the gymnasium. Here their work consists in regular ball practice and general exercise. In the ball work, they pitch, catch, throw and bat in their "cage," as they sometimes call their wire-netting enclosure. Here they can do good work in the individual positions, but there is no chance for playing together as a team, or for developing the things like fine base-running, which can only be acquired by actual playing.

Their general gymnasium work consists in practice on various systems of weights, principally for the arm and body muscles, and a short, sharp run of perhaps three-quarters of a mile.

To finish up they take a bath, not a cold shower, though.

As soon as the weather permits they begin out-door work. This is daily, and consists in games every Wednesday and Saturday, and on other days, in practice in batting, base-running and fielding, such as is customary in all cases where a nine is systematically trained. The time spent in actual work is probably not more than one hour per day, except when games are played.

During the last four years college nines have improved very rapidly, and now they may hope to play a good game against any team. During the last two seasons I remember eight games in which our nine played League teams, the Chicagos, Detroits, Bostons, Providences, and Worcesters, and of these games our nine won four.

At present our rowing training begins early in October and continues, with the interruption of three weeks at the Christmas vacation, until about July 1st, when our race comes off.

Every crew must vary its training to suit the race for which it is preparing. Our race is four miles, straightaway, eight-oared crews, with cockswain, in best and best boats.* Therefore we are required to do different work from what a four needs for a mile race, for instance.

As much of our work is done on the water as is possible. In the winter of 1879-80 our crew was only in the house about two weeks. Such a winter is an exception, however, and I suppose that two months, at least, would be a fair average time for gymnasium work.

Within the first week in the fall the daily work of the crew amounts to perhaps five miles of hard rowing with no stop except the time necessary to turn around and start on the pull home after the row out. This distance is gradually increased to perhaps eight miles a day before going into the gymnasium. With us the work is all done in shells, paper or wooden, with the best coach-

^{*&}quot;Best and best boats," is a phrase used more by professionals than amateurs, meaning that each party may use any boat propelled by oars, getting the best they can without restriction. Sometimes races are rowed in which boats of a certain kind must be used, as barges. But "best and best boats" allows anything.

ing we may be able to get in college. After the row there is a bath, all through the year.

As soon as ice makes rowing impracticable, we resort to the gymnasium—or gym, as the college man invariably calls it.

Here our work is a little general gymnastics, a smart run of from a mile and three quarters to three miles or over, averaging perhaps two miles and a quarter, and a row on our hydraulic machines, rigged exactly as our boat is, followed by the usual bath. Perhaps I should have said before that there is a running track in the gym. As soon as we can, we go back to the water and increase our rows gradually. Later in the Spring we take two spins daily, doing in all from ten to twelve miles a day. The shorter row, when two are taken daily, is easy rowing, and is only for form, or good style. During our work in the Spring we are coached daily by the most competent graduate we can find, from a steam launch which we keep to follow the crew for this purpose.

After our examinations are all over, we go to New London, Conn., where our races are held, taking a cook, waiters, etc., and hiring a house there on the river bank. Here we put on the finishing touches, and row our race. As often as is possible in the Spring we row over the course on time to test ourselves.

Now as to the results. To specify them directly would be difficult if not impossible.

In regard to their effects, however, I think nothing would be gained by trying to separate the different branches of athletics. For, though they are very different, they all have the same tendencies and may be classed together under the head of physical exercise.

As to their influence upon our general physique, I can only speak from my general impressions, for I have no very accurate statistics even in my own case. I may say, that during my four years here I have seen perhaps fifty rowing men, in class and university crews, and three times as many base-ball and foot-ball men, and while I could mention numerous cases in which there has been a marked improvement in physique, I cannot remember a single instance in which there has been an accident through over exertion, or one in which the man has even seemed to fail to develop, while such a thing as loss of health or deterioration has been unheard of. The rowing is the only work severe enough to cause any danger of over-training, and in this, the fear of such a danger and its effects in the race has always led to an error in the other direction in the crews of which I have heard, or in which I have rowed. In general it seems to me that the physical effects of our rowing, or other sports, are very much the same as those in any hard work, as farming, except that we have an advantage in working more intelligently.

I can tell you particular results in my own case. I came here weighing

160 pounds, troubled some with headaches, and so soft and fat that I could not row or run a mile. Now, when out of hard work, I weigh 200 pounds, I don't have one headache a year, I can take a four or five mile run in the gym. if any one wants to lead, and I had the reputation of pulling one of the strongest oars in the boat last year. The last time I weighed myself before the race I weighed 184 pounds, stripped. I measure, stripped, five feet ten and one-half inches in height, forty inches round the chest, and I've forgotten the rest. Down on the farm I can make the Yankee farmers weary, too. Ask Will.

As to effects on the intellect, I am rather at sea. It is impossible to get statistics, and they are necessary for any general conclusions. I have been somewhat interested in this myself, and have come to about this conclusion,

1st. The time required by the athletics leaves time enough for study. I proved this by experiment.

2d. As far as I can judge, a man's scholarship is, if anything, benefited by athletics. I come to this conclusion by observing men to see if there is any fall in the scholarship of men who first do nothing in athletics, and then take them up.

Then I notice the scholarship of men while they are engaged in athletics, and compare it with their work in that part of the year when they are free from this tax on their time.

Thirdly, I compare atheltic men with non-athletic men of the same style; i. e., a society man who is also an athlete, and a non-athletic society man.

Making these comparisons as fairly as I can, I conclude that the benefit which President Carter of Williams suggested to me that we athletic men should get from our regular work, in its strict discipline tending to help in other things, is really obtained, and that athletics tend rather to help men than to hinder in scholarship.

As to any effect on the character of the mind itself, I feel still less competent to speak. However, though I have never heard the other boys discuss this subject, I can say that, in my own experience, since I have rowed I have never undertaken a hard piece of work, farming, studying, or anything else, without having thoughts of hard work in rowing come into my head, and so it seems more certain to me, each time I think of it, that any man who wishes to put into his work a determined spirit of fight that has no right to give up until both boats are over the line, can find no better school in which to acquire a spirit of courageous perseverance than in one or two races where his muscles have all ached, his breath seemed all gone, his mouth has been parched and his heart has nearly deserted him—where it seemed impossible, but where he accomplished the impossible and held on—and won. A man remembers a race like that, and it helps him every time he is in a hard place.

What I said as to relative scholarship of course implies my opinion as to its affecting the mind's capacity for work.

Now, as to the sexual system, and how it is affected by our system of training, I am prepared to say very little. What I can learn from the boys, however, has tended to confirm my impression that the opinion you suggest in your letter is correct. Of course there are no statistics among the boys here as to the frequency of seminal leakages during training and at other times, but there seems to be a very general opinion among the men on the crew, at least, that during our hard work such discharges are much less frequent. I am inclined to think that this is correct, because what is reasonable seems to be supported by actual facts,—but I am so ignorant in regard to such subjects that I do not wish to be positive.

I think I have now given you as good an idea as I can of our athletics, and the general character of their effects, so far as I know anything about it.

I am sorry I cannot put it into the form which you wish, but I think you will agree with me in believing I could not do it. I have tried to be full enough to give you a comprehensive idea of the subject, so that you can write or speak on it intelligently, even if you have no other sources of information.

* * I have given my own experience a prominence that may seem rather unnecessary and unbecoming, the reason being that I am most familiar with my own experience.

* *
I am in the Law School, studying and rowing, and enjoying myself generally.

* Yours Very Sincerely,

I know of no one who has a better right to speak positively, or who is in better position to speak authoritatively as to the merits or demerits of physical exercise, than Archibald Maclaren, of the University Gymnasium, Oxford. In his work on "Physical Education," he makes the following able and earnest plea for reasonable care of the body through physical culture:

"Exercise alone of all the agents of growth and development can be regarded in an *educational* light—alone is capable of being permanently systematized and administered as a means of progressive bodily culture. There are rules and regulations to be observed in the administration of the other agents, to suit age and season, and habits and occupations; and on the judicious observance of these much of the bodily health of all, but especially of the very young, the middle-aged, and the old, depends; but it is to Exercise almost exclusively that we must look as the means of actual physical culture during the greater part of the period of growth and development. In a treatise on Physical Education therefore, Exercise claims the most important place—claims it, however, not more from its own value than because it is so much more liable to be misunderstood, misapplied, or neglected than any of the others. Air, food, and clothing are all, in a measure, familiar to every one; and although with many the modus operandi of each may not be understood, still their results are evident and immediate; and where error in their application is committed, it is usually either from some inevitable cause of hindrance, or from willful infringement of laws of which ignorance cannot be pleaded. Thus the dweller in the crowded city is quite aware that it would be better for him and for his children to breathe the pure air of the country; but his avocations determine for him the place of his dwelling. The insufficiently-fed knows well that it would be better for him and for those for whom he has to provide to have abundance of nourishing food; but his poverty determines for him his diet. On the other hand, the intemperate needs no other reminder than the bodily discomforts he experiences to know that by him one of the agents of health has been abused, and its laws broken: he was conscious of the fault on its committal—the penalty was also foreseen. this is not the case with Exercise; in its nature and in its influence it is still greatly misunderstood, and although the evils which arise from its abuse or misapplication are really as direct and as serious as those which follow the non-observance or misapprehension of any other agent of health, their origin is often less apparent, and they follow less suddenly on the committal of the fault: the punishment is as sure and as severe, but not always as clearly traceable to the transgression. Error here in a great majority of cases may arise from actual want of knowl-

edge. It is comprehended at once that all the other agents may and should be modified to meet the wants, and to suit the age, the health, and the habits of individuals, but not so with Exercise. Persons of the most opposite bodily condition and capacity will without question or consideration undertake the same physical exertion, although to one the effort may be slight, to the other exhaustion irretrievable. A vague feeling may be entertained that Exercise is a thing to be taken, but to what extent, at what time, or in what manner, are points upon which few really consider it necessary to possess any adequate information. The regular urgent reminders which follow on the neglect of the other agents are missing here; or when they do occur it is only as they affect some other one of these. Forwant of Exercise, appetite fails-for want of Exercise, comfortable bodily warmth is not sustained—for want of Exercise, refreshing sleep is not obtained—but these, reminders though they be, come indirectly and, as it were, incidentally only. They speak not with the imperative voice of hunger or thirst, or cold, or oppressive heat, or fatigue, or unpleasantly affected respiration. Unfortunately also there are many persons who have what might almost be called a natural disinclination to bodily exertion, that is, a disinclination to physical effort, inherited or induced by circumstances attending the comforts, the luxuries, and the occupations of civilized life-a disinclination which, unless combated at the very outset, grows stronger by indulgence; for Exercise is determined by what a man does, not by what he possesses or can obtain. It is from these and many other reasons hereafter to be noticed, such as extreme mental employment and the engrossing cares and absorbing anxieties of business, that Exercise in the present day holds its all-important place among the agents of health, and the laws. which regulate its administration their all-important office in promoting growth and development.

[&]quot;What then, as I have already asked, and do not now for-

the first time endeavor to answer, is Exercise? What does it do? and, How does it do it?

"Exercise may be defined as muscular movement produced by muscular contraction, by which indeed every motion of the living organism is accomplished. This property of contractility with which muscular fibre is endowed, and which, so far as we know, is shared by no other constituent of the body, is to some extent described in the term—being the power of contracting or shortening the space between its two extremities.

"The entire muscular system has been primarily divided into voluntary and involuntary muscles. The first, comprising all those which are subject to the will, form the bulk of the muscular system; they are mainly distributed over the framework of the bones, their office being to move the part or parts to which they are attached. The second comprises those over which the will has little or no control, but which are stimulated to action by some other agency, each muscle or class of muscles having its proper stimulus; these are placed chiefly within the cavities of the body, and are employed in the vital processes of respiration, digestion, circulation, etc. It is with the voluntary muscles that we have now particularly to deal.

"Exercise I have defined as muscular movement; but it must be movement of force sufficient to engage the energetic contraction of the muscles employed. Here we are touching upon the most important principle in the entire subject under consideration, namely, the destruction and renovation of the tissues of the body which it is the object of Exercise to accomplish.

"Our material frame is composed of innumerable atoms, and each separate and individual atom has its birth, life, and death, and then its removal from the 'place of the living.' Thus there is going on a continuous process of decay and death among the individual atoms which make up each tissue. Each atom preserves its vitality for a limited space only, it is then

separated from the tissue of which it has formed a part, and is resolved into its inorganic elements, to be in due course eliminated from the body by the organs of excretion. These processes are greatly influenced by the activity of the bodily functions. Every operation of the muscles or nerves involves the disintegration and death of a certain part of their substance. We cannot lift a finger, we cannot perform the slightest movement, without causing a change in certain of the atoms which compose the muscles executing the movement, in those of the nerves conveying the stimulus which directed them to contract, and in those composing the nerve centers in which the stimulus originates; and this change involves their decay and death.

"The loss then of the body, and of each part of the body, being in relation to its activity, a second process is necessary to replace the loss, otherwise it would rapidly diminish in size and strength, and life itself would shortly cease. This reparative process is performed by the nutritive system, the organs of which convert our food into blood-liquid flesh (chair coulante), as it has been called-which in itself contains, and in its neverending circulation bears to each tissue, the material for the replacement of all waste and for the building up of all additions. And as this material is borne along through channels permeating every part of the organism, each part, by a law incomprehensible but unerring, selects from it and appropriates that particular pabulum which is fit for its special use, and that only. At every point of the human body is this law in unceasing operation—activity, a loss of vital power, disintegration, decay and removal—to be met by a replacement of substance and a renewal of vital power. And as the disintegration of any part is hastened by its activity, so by an equally unerring law is the flow of blood, bearing the renewing material, increased in that part; and again by a law equally unerring and ever operative, the worn-out particles are cast into this current in its backward course, and conveyed to organs whose

function it is to eliminate them from the body. And during the period of growth, and, within certain limits, until the full attainable physical capacity of the individual has been reached, the new will ever exceed the old, so that a gradual increase in bulk and power will be obtained. And the strength of the body as a whole, and of each part of the body individually, is in relation to the frequency with which these atoms are changed; and the strength of the body as a whole, and of each part of the body individually, is thus ever in relation to its newness.

"Exercise, then, as we have seen, is the chief agent in the destruction of the tissues; but it is also the chief agent in their renovation, inasmuch as it quickens the circulation of the blood from which the whole body derives its nourishment, the tide on which is brought up all fresh material, and on which is borne away all that is effete and useless—brought up and borne away most rapidly in those parts which are being most rapidly employed, where disintegration is most rapidly taking place.

"I am here purposely narrowing my subject, and limiting my observations to the process of circulation only as it affects the nutrition of the muscles; but all the systems of the body, and every process connected with its growth and development, or influencing its health and strength, are also proportionately affected by the acceleration of the circulation of the blood by Exercise.

"But besides muscular movement, true Exercise possesses another ingredient, which may be termed resistance. The voluntary muscles are made to do more than merely to move the parts to which they are attached. Man is placed on the earth to labor, to toil, to overcome and remove material obstacles innumerable. Everything which floats upon the ocean or is built upon the land is the work of his hands—in simple fact, has been constructed by the contractions of his voluntary muscles; these muscles were made therefore not merely to enable him to move, but to do this and to carry his burden too.

They were made in their action to encounter and overcome resistance in every movement; and being created for this, their health and strength will be developed and sustained in proportion to the fidelity with which this their design is remembered and observed. Exercise, which is voluntary labor, must resemble actual labor in all its physical essentials, if it be desired to obtain from it the physical advantages which actual labor bestows; without resistance there can be no full demand for muscular contraction, no full call therefore for material disintegration, no full requirement therefore for material renewal involving proportionate increase of bulk and power; for, as we have seen, the strength of the body, and of each part of the body, is in relation to its youth or newness.

"These are the chief essentials of Exercise when viewed in connection with the voluntary muscles; but it is also an essential of true Exercise that the movements of these muscles shall be of speed or force sufficient to quicken the breathing; in other words, to increase the action of the involuntary muscles engaged in the processes of respiration and circulation. During active exercise the act of breathing becomes greatly accelerated; each inspiration is larger in volume, and each follows each in quicker succession, than when the body is inactive. This is a most important feature of exercise, for with every breath a load of the wasted material of the body is given up by the blood in the form of carbonic acid, etc., and its place supplied by life-giving oxygen from the surrounding atmosphere. To make this all-important process plainer, let us glance at the mechanical action of breathing.

"On the requirement for air, the besoin de respirer, being experienced, the inspiratory muscles contract and lift the osseous frame-work of the chest, thus increasing its diameter from side to side and from back to front; while at the same time the large arched muscle (the diaphragm) forming the convex floor of the cavity also contracts, and in doing so its fibres

are straightened, and its elevated surface is consequently depressed, increasing the diameter of the chest from above downwards. As this takes place the air rushes down the trachea, or windpipe, and passes at once into the lungs, which it fills out in every direction. But all muscular action is intermittent; the contractile effort accomplished, the reaction begins; the inspiratory muscles relax and a second set of muscles, the expiratory, antagonizing those which lifted the walls of the cavity, now contract, and the muscles of the abdomen, antagonizing the diaphragm, also contract, and the air is expelled by the aperture through which it entered. This is, in outline, the process of ordinary effortless breathing; but in the forced respiration of energetic exercise, and especially of exercise calling into action the muscles of the upper limbs and the upper region of the trunk, many of the voluntary muscles may also be employed in the process of respiration.

"I have stated that the involuntary muscles are prompted to action each by its proper stimulus; and the heart is stimulated by the presence and augmentation of blood within its cavities. Thus, the instant that any act of exercise begins, a considerable number of voluntary muscles are put into rapid employment; the contractile action of these muscles impels the blood in their veins onwards towards the heart, venous blood being greatly dependent on muscular action for its circulation; and the heart, stimulated by its presence, energetically contracts, ejecting its contents, and the blood is flushed along the pulmonary artery and distributed throughout its ramifications in the lungs. As the exercise continues, wave on wave comes up from the heart, each driving before it its predecessor,—out of the lungs, along the pulmonary veins, back to the heart, where it is again rapidly admitted and as rapidly ejected; for the heart is a double organ, performing the double office of propelling the blood through two distinct channels of circulation—through the one for its aeration in the lungs, through the other, when so aerated.

for the nourishment of the whole body. Out of the heart then it is again ejected, out by the great trunk arteries, and along their innumerable branches, to complete the round of the systemic circulation. But neither heart nor lungs, nor vein nor artery, throughout the double circulation, is a passive agent in its progress; for though the heart is the great agent of propulsion, the whole circulatory channels possess a certain amount of contractile power, and are endowed with a degree of elasticity, and may in fact, in this respect, be regarded as hollow muscles actively engaged in regulating the moving current within them; and their health and strength, and functional ability, are promoted by the same agencies, as they are subject to the same laws, as those which influence the condition of the rest of the body.

"On these two powers, muscular and respiratory, depends the ability to perform all bodily exercise. The first involves the contractile force of the voluntary muscles employed; the second is more complicated, involving the contractile force of the heart, the condition of the lungs to perform their function, the size and shape of the chamber in which these organs are contained, and the contractile force of the respiratory muscles, voluntary and involuntary.

"Such in brief is Exercise, such the ends which it accomplishes, and such the manner of their accomplishment; namely, the destruction of the tissues, the hastening of the decay and death of every part coming within its influence; but also the speedy removal of all waste, and the hastening forward of fresh material for its replacement; and in doing this it attains three distinct but co-relative results.

- "1. It increases the size and power of the voluntary muscles employed.
- "2. It increases the functional capacity of the involuntary muscles employed.

"3. It promotes the health and strength of the whole body by increasing respiration and quickening circulation.

"Our first record of physical training, that is to say, of any system adopted and practiced with the single view of improving and cultivating the physical resources, is to be found in the competitive exercises of the early Greeks and Romans; and it has been said that we have lost as much by the discontinuance of the system of bodily exercise of these nations as we have gained by our knowledge of physiological science. This is one of the aphorisms which men are fond of repeating, but which will not stand criticism. No price can be set upon our knowledge of physiological science, no estimate can be formed of its value. The extent, the importance, and the value of the sys tem of bodily exercise practiced by the Greeks and Romans we can appraise exactly—can gauge with almost mathematical accuracy, because we know entirely of what it consisted and for what purpose it was organized and maintained. We can therefore tell, by a comparison of the want experienced with the thing produced to meet the want, if the object desired were accomplished; and we can do this chiefly, if not wholly, by the light of physiological science, which alone has revealed to us what Exercise is, and what its suitable administration can accomplish in the human frame.

"It is generally admitted that this system of bodily training—unguided, undirected as it was by a ray of science deserving of the name—accomplished the object desired. How did they who framed it, thus groping in the dark, grapple with and hold fast by the truth? By the observation of results. This was the lamp which guided them in the selection of the exercises which formed their system of bodily training. They observed that the strength of the body, or of any part of the body, was in relation to its muscular devolopment, and that this development followed upon, and was in relation to, its activity or employment. They did not know that man's material frame

was composed of innumerable atoms, and that each separate and individual atom had its birth, life, and death; and that the strength of the body as a whole, and of each part individually, was in relation to the youth or newness of its atoms. And they did not know that this strength was consequently attained by, and was retained in relation to, the frequency with which these atoms were changed, by shortening their life, by hastening their removal and their replacement by others; and that whenever this was done by natural activity, by suitable employment, there was ever an advance in size and power, until the ultimate attainable point of development was reached. They simply observed that the increased bulk, strength, and energy of the organ or limb was in relation to the amount of its employment, and they gave it employment accordingly.

"They must have observed, however, that this did not apply in equal degree to all kinds of muscular employment, and that it applied most directly to those where the action was rapid and sustained. They did not know that this rapidity of muscular contraction and expansion was the chief agent in quickening the circulation of the blood, from which the whole body derived its nourishment; the tide on which was brought up all fresh material for incorporation into its tissues, and on which was borne away all that was effete and waste—brought up and borne away most rapidly in those parts which were being most rapidly employed—for they did not know that the blood was a moving current at all. They only observed that exercises consisting of rapid muscular movement were most conducive to strength and activity; so, without exception, the exercises composing their system were of this description.

"But they must have observed also, that there was a form of physical employment which did not give physical development, or yield its natural fruits of health and strength; and that was the slight, effortless occupations of many art-callings and crafts. They did not know that without resistance to be overcome there

could be no full demand for volition, no full call therefore for material disintegration and renewal, with proportionate increase in bulk and power. They simply observed that development was in relation to the quality as well as to the quantity of exercise—that where energy was exacted in the practice, energy was the fruit of the practice; so for their system they selected exercises where energy was voluntarily called forth in the highest possible degree.

"Other essential constituents of exercise owed their recognition to the same source—the observation of results. observed that during certain kinds of physical exertion the act of breathing became greatly affected, that each inspiration was larger in volume, and that each followed each in quicker succcssion, than when the body was inactive. This they must have observed, although they may have viewed it but as a drawback to physical ability, a hinderance to be overcome, or in the same light in which our schoolboys now view it—as a condition of 'bad wind' or 'internal fat;' for they could not know that in every breath they breathed, a load of the wasted material of the body was given up by the blood and its place supplied by the life-giving oxygen from the surrounding atmosphere; and that just in proportion to the rapidity and energy of muscular movement during the exercise was the rapidity and volume of the current of the blood rushing through the lungs; and that, therefore, for this current of blood to be aerated, proportionately large and proportionately rapid was the current of the air respired; and that, following the natural law of development being in relation to employment, the lungs themselves were strengthened by this increased activity. They, probably, simply observed that the power to sustain this accelerated process of respiration was obtained in proportion as the exercises which excited it were practiced; so exercises which required the sustaining of accelerated breathing received an important position in their system.

"They must have observed, further, that energetic physical exertion and quickened respiration caused the skin to be suffused with moisture, and that this gave instant relief from a discomforting sense of heat. They did not know that this augmented heat was in a great measure caused by the accelerated breathing—the fanning of the fire which is ever burning in the living frame; and they did not know that this moisture was water drawn from the blood and poured out over the skin's surface, in order that the discomforting heat might be with it eliminated. They did not know that the skin itself was a covering of marvellously woven network, presenting millions of interstices and aperatures, and that each of these aperatures was the open debouche or outlet of a duct or tube which, striking deep its convoluted roots among the underlying strata of blood-vessels, separated from the accelerated currents what might prove injurious to the health of the body, and poured it forth through these myriad mouths; but they observed that these skin-exudations proved a powerful aid to the aquisition of permanent health and strength, and notably so to the health, elasticity, purity, and beauty of the skin itself. So, without exception, every exercise in their system is of that kind which readily contributes to this result.

"Finally, they must have observed, that just in proportion to the amount of clothing worn during exercise, were the processes of respiration, and the evaporation of this moisture from the skin, retarded. They did not know the structure or functions of either lungs or skin; still they saw that they both acted together, were stimulated to activity by the same means, and by the same means were sustained in functional ability; and that during physical exertion hinderance to both was in proportion to the amount and weight of the garments worn; so they simply, while performing their exercises, reduced their clothing to the minimum, and thence called their system of bodily training 'Gymnastics.'

"Thus, then, by the observation of results were the ancients guided with sufficient accuracy in the comprehension of the chief features, and in the estimation of the relative value, of certain modes of bodily exercise; and thus they were enabled to choose, on assured grounds, those exercises which were most suitable for the system which they desired to organize. They desired a system specially applicable to individual culture, individual exertion, individual excellence, individual distinction; a system which should cultivate personal courage, presence of mind, and decision; a system possessing the utmost limit for individual effort, presenting the fullest opportunities for personal display and personal distinction. Therefore was the hand laid upon all exercises of high competitive effort-wrestling, boxing, throwing the discus, racing on foot, on horse-back, and in chariot. The system was as simple, as practical, and as serviceable as the Greek shield or the Roman sword.

"The system of bodily training of Greece and Rome had then but one aspect, one aim, one object. It was designed to practice the youths of the country in all exercises tending to qualify them for the exigencies of war, as war was then pursued, as campaigns were then made, as weapons were then borne, as battles were then fought. Other object, other aim, other aspect, had it none.

"But in those days, as in our own, there must have been men of unsound constitution and imperfect growth, from original weakness of organization, or from illness, ignorance, neglect, accident, and other causes. What sytem of bodily training was framed for their behoof? None. Here the observation of results was unequal to the requirement. They could reach no higher—they aimed no higher—than the production of a series of athletic games, suitable to the young, the brave, the active, the strong, the swift, and the nobly born.

"Our knowledge of physiological science is something more valuable than this. A system of bodily exercise which should

give added strength to the strong, increased dexterity to the active, speed to the already fleet of foot, is not what is alone wanted now. It is not to give the benefit of our thoughts and observations and the fruit of our accumulating information to the already highly favored, and to them only, that we aim. On the contrary, it is the crowning evidence of the Divine origin of all true knowledge, that in benefiting all within its influence, it benefits most bountifully those whose needs are the greatest.

"In our days, as of old, the race is still to the swift and the battle is still to the strong, but the battle of life now is waged with the brain for weapon, and the race is the high pressure competitive efforts of memory and mind. These are the great and all-absorbing struggles of our times, a 'struggle for life' as hard, and involving results and transformations as unerring and inevitable, as ever were traced in the origin of species.

"It is health, however, rather than strength, that is wanted now-that is the great requirement of modern times, with modern men, at non-military occupations. Bodily power, activity, and stamina for the endurance of protracted fatigue, are still at this day as much the real want of the soldier as they were in the days of Xenophon, of Cæsar, of Napoleon. But the purposes and practices of war are not the all in all with us as they were with the Greeks and Romans; nor are the whole of our able-bodied men under arms, nor the whole of our youths preparing for conscriptive battalions, as were the youths of Germany and France in the last century. Our own army, scattered over the whole globe, and encountering the severities of every clime, claims but a fraction of our men; a small portion only of our youths are in uniform: but other occupations, other habits, other demands upon mind and body, advance claims as urgent as ever were pressed upon the soldier in ancient or modern times. From the nursery to the school, from the school to the college

or to the world beyond, the brain and nerve strain goes on—continuous, augmenting, intensifying. Scholarships Junior and Senior, Examinations, open Fellowships, speculations, promotions, excitements, stimulations, long hours of work, late hours of rest, jaded frames, weary brains, jarring nerves—all intensified and intensifying—seek in modern times for the antidote to be found alone in physical action. These are the exigencies of the campaign of life for the great bulk of our youths, to be encountered in the schoolroom, in the study, in the court of law, in the hospital, in the asylum, and in the day and night visitations to court and alley and lane; and the hardships encountered in these fields of warfare hit as hard and as suddenly, sap as insidiously, destroy as mercilessly, as the night-march, the scanty ration, the toil, the struggle, or the weapon of a war-like enemy.

"Yes, it is health rather than strength that is the great requirement of modern men at modern occupations; it is not the power to travel great distances, carry great burdens, lift great weights, or overcome great material obstructions; it is simply that condition of body, and that amount of vital capacity, which shall enable each man in his place to pursue his calling, and work on in his working life, with the greatest amount of comfort to himself and usefulness to his fellow-men. How many men, earnest, eager, uncomplaining, are pursuing their avocations with the imminency of a certain break-down ever before them—or with pain and weariness, languor and depression; when fair health and full power might have been secured, and the labor that is of love, now performed incompletely and in pain, might have been performed with completeness and in comfort.

"Let it not from this be inferred that I consider health and strength as in any manner opposed to each other; on the contrary, they are most intimately allied, and are usually by the same means and in the same manner obtained. Very closely

are they connected, but they are not the same, and a man may possess either without the other. For strength may be due to the great force possessed by one system of the body, such as the muscular; or great force in one part of the body, such as the trunk or the limbs; but health is the uniform and regular performance of all the functions of the body, arising from the harmonious action of all its parts—a physical condition implying that all are sound, well-fitting and well-matched. Young minds do not look far enough into life to see this. distinction, or to value it if seen; they fix their eyes longingly upon strength —upon strength now, and care not for the power to work long, to work well, to work successfully hereafter, which is Health. Therefore it is fortunate that the same means which usually give strength give health also; although the latter may be jeopardized by irregular efforts to obtain the former. Again, it is fortunate that this most desirable of all earthly possessions should spring from the regular and uniform development of the body as a whole, not from the extreme development of any special part. Vast strength of limb may be found united to a comparatively feeble trunk, a massive trunk to dwarfish limbs, great muscular force to delicate lungs. These alike reveal local power and local weakness, and these are not the developments which yield Health.

"Let both man and boy therefore cultivate strength by every available means, but let it be general not partial strength. The Battle of Life requires for combatant the *whole* man, not a part; and the whole, too, in as good condition as can be brought into the conflict.

"There is no profession, there is no calling, or occupation in which men can be engaged, there is no position in life, no state in which a man can be placed, in which a fairly developed frame will not be valuable to him; there are many of these, even the most purely and highly intellectual, in which it is essential to success; essential, simply as a means, material but

none the less imperative, to enable the mind to do its work. Year by year, almost day by day, we see men falter and fail in the midst of their labors-men to whom labor is life, and idleness is death-men who with a negation of self and self-comfort even unto martyrdom, devote themselves to great purposes and great works, and before their completion fail; men who run the life-race with feet winged with the purest faith and hearts full of the noblest hope, and who, with the goal in view, falter and fail; and all for want of a little bodily staminaa little bodily power and bodily capacity for the endurance of fatigue or protracted unrest or anxiety or grief. Strongly has this been ever impressed upon me, more strongly than ever of late years, but never so strongly, never so sadly, never in its every aspect so impressively, as in the death of a late statesman, eminent alike for the height of his intellectual attainments, the nobleness and purity of his aspirations, and the gentleness and almost feminine sweetness of his character. sank in early manhood, with his great career just begun, his great works but outlined by his hand; to other hands was left their accomplishment, to other hearts their fulfillment, and all for want of a little of that bodily stamina, a little of that material hardihood, a little of that power of enduring fatigue, which he was, even as he failed, seeking to extend, through the means of this system of bodily training, to every soldier in the land.

"This need of such a preparation for the coming struggle of manhood in these times of high civilization and intellectual advancement being then so apparent, what is the great hinderance to the due training of the body? It is to be found in the too exclusive cultivation and employment of the mind; in the long and continuous hours of physical inaction with extreme mental effort and inordinate mental stimulation, which the requirements and educational demands of the present day often involve; in the overlooking or ignoring of the fact that the

body also has urgent and distinct claims to culture and employ-

"Are these two then opposed? Is a healthy, energetic, and vigorous frame incompatible with a powerful and vigorous intellect? We know that it is not so. Science and experience alike confirm the fact that the two are not only compatible, but that the one is in every case an aid to the other. That the intellect can rarely attain, or if it already possesses, can rarely long retain a commanding height when the bodily functions are impaired; that the body itself will be at its best and most worthy condition when its claims are most fully shared by mental occupations, and that the healthy condition of the mind, produced by sufficient and natural employment, will react most favorably upon the body, can never be doubted for a moment; yet we continually find the one warring upon the other. We shall find the reason of this in the overlooking of the laws which govern both mind and body.

"The mind acts through a material organ, the brain, upon which it is entirely dependent, and which, in common with the other organs of the body, is subject to a constant decay and constant renewal from the same vital fluid; these processes being accelerated and its strength and vigor consequently augmented in proportion to its activity. But in common with other organs also, if this activity is carried on beyond certain limits, its waste exceeds nutrition, its strength gives place to weakness. The mind then is dependent upon the blood for its material support, and its healthy action is dependent on its receiving an adequate supply of healthy blood. * Moreover, the organ of the mind being subject to the same laws as the other organs, requires similar alternations of rest and action to maintain it in

^{*}This is manifested in numerous everyday occurrences, and one proof of it, frequently coming under my own notice, may be seen in youths whose upward growth is very rapid and demands all the resources of the system; in which case the mental powers occasionally become temporarily enfeebled, recovering rapidly as soon as the unusual demand upon the nutritive powers has ceased. This is especially the case when nutrition from insufficient or improper diet is inadequate.

its natural state of efficiency; and if either of these states be deficient or in excess, the brain, and consequently the mind, will deteriorate. If therefore the cultivation or exercise of the mind be neglected, it will of necessity be weakened in precisely the same manner as the other organs are weakened by insufficient use, will deteriorate both in strength and vigor and the power of enduring fatigue. If, on the other hand, the exercise of the brain be excessive, beyond the point where the nutrition is equal to the waste, it will suffer in the same way and to the same extent as the other organs would do.

"It would be well if parents would ask themselves at the outset what is their object in the training of their children. 'They wish them to be thoroughly educated,' would probably be the response. Then let their first care be that the body shall be healthy and fairly grown. Let them take care that the mind shall receive that amount of culture which will develop and strengthen it, but let them pause at that point where exercise and application are merging into fatigue; so shall it attain its utmost attainable point of strength and vigor, so shall it reach its highest attainable capacity of enduring exertion and effort. Year by year will it be found to increase in these attributes, and in the aftertime, if a call for extra exertion should come, it will not come upon it unprepared. And more than this, the body having received its due share of cultivation also, will itself be gaining year by year, and while contributing to the health of the mind by its own health, will be able to endure successfully its allotted amount of labor, in whatever position of life, under whatever sun, it may toil. Nor let parents imagine that their sons who are destined to what are, chiefly or exclusively, sedentary professions, need not so much preparation for their coming life. The clergyman, the physician, the barrister, are often called upon to endure even as much bodily fatigue as the soldier or the sailor, and the numerous premature failures among all these classes show how needful such

preparation is and how little the necessity has been recognized.

"And yet how often do we find parents stimulating by every imaginable method, and by every suggestive expedient, the mental cultivation of their children; inciting them to take from the hours that should be given to physical exercise and to physical recreation, and to devote them to study. What is it these parents are seeking? Is it the future welfare of their children, or is it (let us examine it closely) the gratification of their own pride in their children's superior talents and intellectual attainments? It has been said that the pride of parents in their children is, of all kinds of pride, the most excusable; but even our pride in our children may have many phases, and that phase cannot be a purely unselfish one which would sacrifice ultimate health and happiness for temporary distinction, praise, and admiration.

"The very interest evinced in the premature development of intellectual ability is dangerous to the young, appealing as it does to one of the most powerful stimulants in the youthful mind, the love of praise and notoriety. Boys soon learn to love the excitement which such an artificial mode of life produces, and cease to feel any interest in, or any desire for, the active pursuits usually so dear to youth. Others there are thus forced into abnormal advancement, who work on reluctantly to the end, but once emancipated, the distasteful task is foreverabandoned. Which of these is most deserving of our pity, the unnatural young hermit, who in his books alone takes delight, or the too natural little Arab to whom books and book-learning have become a thing of disgust? Most parents have at some time or other felt a pang of alarm at seeing their child turn with carelessness from the food which they knew to be necssary to its well-being. I have frequently experienced the same feeling at seeing a child turn with indifference or dislike from the sports and pursuits of his companions to creep back to his books; and also as much alarm, mingled with anger-for false

and cruel must have been the teaching which caused the dislike—at seeing the healthy and strong child turn with repugnance from his books. *

"Earnestly however as I desire to advocate the cultivation of the bodily powers, I would guard against its being thought that I would neglect cultivating to their full capacity the mental That would only be erring in another direction, and although a safer one in some important respects, important as regards present comfort and future health, it is still altogether erring; and the right path is broad and open and plain, free alike to all who will look for it with unprejudiced eyes. The brain also requires systematic and ample exercise to develop its attainable powers, and where there exists no unusual weakness, its reasonable culture can scarcely begin too soon or be pursued too steadily. Putting aside the necessity in these days for a sighly comprehensive education, a degree of mental culture roportioned with careful hand to the age and mental and physical capacity will be found to act with advantage to the latter, and the relish and zest for bodily exercise, which supplies the most valuable of all incentives, will be increased by it. giving of a large part of the day to exclusive bodily occupations is, for those who are to take a place in the educated world, an equal error—a rejecting of the advantages of civilization. The body makes no such exacting demands. Let it not therefore be inferred that I would undervalue the purely mental work of schools, nor let it be for a moment imagined that I would advocate a less active, a less energetic, a less earnest pursuit of it. On the contrary, it is because I value it at its highest price, and because I would sustain in their most ardent efforts its youthful votaries, and enable them in the aftertime to reap to the full the fruit of their labors, that I plead for a more dis-

^{* &#}x27;My boy works seven hours a day regularly, sometimes eight,' said a lady to me composedly. The boy had just turned his eighth year. Four languages besides his own, Latin and Greek, French and German, with History, Geography, Arithmetic, and Instrumental Music! Were his headaches real or sham I wonder?

criminating indulgence in occupations purely mental and sedentary at this period of life. For there is no error more profound, or productive of more evil, than that which views the bodily and mental powers as antithetical and opposed, and which imagines that the culture of the one must be made at the expense of the other. The truth is precisely the reverse of this. In the acquirement of bodily health mental occupation is a helpful, indeed a necessary, agent. And so impressively has this been proved to me, that in cases where the acquisition of bodily health and strength was the all-in-all desired by the parent, and the one thing longed for by the child (and in some cases almost despaired of by myself), I have been careful to allot and mark out a proportion of mental with bodily occupation.

"Schools, large and small, are yet to be found where the exclusive bookworm is an object of admiration and wonderment, and master and usher unite in holding him up as an example, and point him out with pride to every visitor. But every sensible man feels for him but commiseration, and regards him but as a warning; for he looks from the boy to the man, and from the schoolroom to the outer world, with its rude encounter and its stern and prolonged struggle, and he sees how unfit are such a frame and such habits for the task;—a warning too which urges less considerate minds to an opposite extreme! 'My boy shall cultivate his body,' says an astonished but not admiring father; and the resolve is a wise one, for well worth cultivating are the varied powers of the human body; and beautiful it is, and wonderful as beautiful, to watch the fair and free development of the frame of a shapely child: but the emphasis on the terminating word was meant to indicate that an exclusive culture should be given to the body, and that its twin sister, its co-ordinate companion, the mind, would be left to shift for herself, disowned, excluded from her rightful share in the educational inheritance.

"Now this must be error, error arising from ignorance of our very selves. Mind and body should be viewed as the two well-fitting halves of a perfect whole, designed in true accord mutually to sustain and support each other, and each worthy of our unwearied care and unstinted attention, to be given with a fuller faith and more reverent trust than they have who would argue that He who united in us our twofold nature made them incompatible, inharmonious, opposed. No, no; even blind and blundering man does not yoke two oxen together to pull against each other. Mind and body can pull well together in the same team if the burden be fairly adjusted.

"'Brute force,' 'brute strength,' are terms we constantly hear used, despisingly, of bodily power when it is designed to contrast it with mental ability; just as we hear the holder of an opposite opinion, and possessor of opposite acquirements, talk sneeringly of the 'mere scholar.'

"But they who speak thus err equally in their praise and in their blame. They seek to sever what were bound together in the very planning, if one may so speak on such a subject, of a living man; they disunite them, and then complain that the dissevered halves are of unequal value; they take the one and cultivate it exclusively, and neglect the other exclusively, and then make comparisons between them; forgetting that their fitness, each for the other, lay in the fair nurture of both, and in their mutual cultivation. Thus we hear of men who think out great thoughts, and work out great conceptions, and who yet in their material frames have not the stamina of a healthy child; just as we see the opposite-men with frames so strong and so hardy and enduring, that incessant toil can scarcely fatigue, and rest alone seems to tire them, yet of mental calibre so small that the intellect seems scarcely adequate to provide for the safety of the mortal machine confided to its care. But either condition is equally the result of error, and either development is equally a monstrosity, although the

former is less repellent than the latter, and less humiliating to our intellectual aspirations.

"But to return to the school-boy. It is not alone in a negative form, by exemption from extreme mental efforts, that the growth and development of his body is to be secured. Active bodily exercise, at regular and frequent intervals, must be obtained, and for this special provision must be made with as serious a purpose as for any school duty.

"All Exercise may be classed under two distinct heads, Recreative and Educational. The first of these embraces all our school-games, sports and pastimes; a long and valuable list, such as no other country can produce, and upon which every Englishman looks with pride and affection, for they mould the characters as well as the frames of our youths. But valuable as these exercises are—invaluable as they are—it will be at once seen that not one of them has for object the development of the body, or even the giving to it, or to any part of it, health or strength: although all of them, in a greater or less degree, undoubtedly have this effect, it is indirectly and incidentally only—the skill, the art, is the first consideration. And in this, as purely recreative exercise, lies their chief value, the forgetfulness of self, the game being all-in-all.

"Out of this great good there arises, I will not say an evil, but a want, a defect. The parts of the body which have to execute the movements of such exercises are those which can do them best, not those which need employment most. Use gives facility of execution, and facility of execution causes frequency of practice; because we all like to do that which we can do well: and thus inevitably, because based on the organic law of development being in relation to activity or employment, certain parts of the body will be cultivated and become developed to the exclusion of the others. So certain is this the case, that it is as easy to tell from the general development of any youth what

recreative exercise he has practiced when at school, as it is to tell from the conformation of the chest whether a man pulls on the bow or the stroke side of his College boat, when he comes to the University. It will be found that the lower limbs and right arm have the lion's share of the employment or exercise in almost every one of our recreative exercises. They largely employ the lower half of the body, and where the upper limbs are employed, or the trunk, it is almost exclusively the right side. These distinctive features in our national recreative exercises have the inevitable tendency to develop the lower half of the body to the neglect of the upper; and this is most distinctly apparent to every eye; the lower limbs are usually large and not infrequently massive, while the upper region is usually small and not infrequently irregularly and imperfectly developed, narrow, flat, and, as it were, compressible: it is, in very many cases, years behind the lower limbs in all that constitutes growth and development. Indeed, I almost daily find in my professional life men in whom this inharmonious development is so great, that the upper limbs and upper region of the trunk, and the lower region and lower limbs, scarcely seem to be the halves of the same individual. And while at any time, amongst the hundreds of men and boys whom I have daily under my care, I might find it difficult to point to one in whom this lower half was really faultily grown, I could with painful facility point to dozens in whom the upper was distorted from its proper conformation.

"Recreative exercises then, from their very nature, are inadequate to produce the uniform and harmonious development of the entire frame, because the employment which they give is essentially partial. Where the activity is, there will be the development; and if this principle be overlooked, a portion of the body only will be cultivated and the neglected portion will fall far behind the others in strength, in activity, in dexterity,

and in endurance, for the simple reason that it will be less abundantly nourished.

"Recreative exercise in sufficient amount is usually in itself sufficient to maintain health and strength after growth and development are completed, but it does not meet the many wants of the rapidly-changing and plastic frames of youths spending a large portion of their time in the constrained positions of study; taking shape almost day by day from day-to-day occupations. Hence the necessity for a system of Educational Exercises. It is the office, as it is entirely within the reach, of systematized exercise to modify the growth and distribute the resources of the body so that each particular part shall have its legitimate share, and so to increase these resources that each part of the growing frame shall have its wants supplied.

"The one great reason why systematized exercise is not always appreciated or recognized is, that its special nature and object, its susceptibility of gradation to meet the requirements of individuals, and its effect upon the different structures of the human frame, are imperfectly understood. Its effects upon any part but the muscular system are seldom taken into consideration; its vast influence over the other systems, and especially on the organs employed in the vital processes of respiration, circulation and nutrition, seldom appreciated. The evils arising from this imperfect comprehension of an agent so important to the healthy growth and development of the young are manifold and increasing—increasing in the ratio of man's intellectual advancement; because so long as it is believed that systematized exercise gives but muscular power, gives that and that only, few of those engaged in purely intellectual pursuits would care to cultivate it, even could they do so without effort, and fewer still would give to it that effort which its attainment demands. And that for this simple reason, that great muscular power would be to a man so situated comparatively without walne.

"But if it can be proved that this muscular power is but one result of systematized exercise, and that not its highest-if it can be shown that properly-regulated exercise can be brought to bear directly upon the other systems of the body, and especially upon the delicate and important structures which encase and contain the vital organs, and on whose fair and full development the health and functional ability of these organs must greatly depend through life, then such exercise takes another rank. becomes as valuable to the man who works with his brain as to him who works with his hands, and will be sought for with a desire proportionate to his intelligence, because it will enable him to prolong and sustain his labors with safety to himself and increased value to his fellow-men. But this culture should be obtained in youth, during the period of the body's growth, when every organ and every limb and every tissue and every bone are advancing to occupy their ultimate place and positionwhile all is plastic and moving, changing and capable of being changed. This is the time for all culture, mental and physical, but most emphatically so for the latter.

"Get the strong limbs and shapely frame, and a little, a very little, will keep them so; get the strong heart and ample lungs set in the fair-proportioned and elastic chest, and a little, a very little, will keep them so—not more than the busiest life can spare, not more than the gravest mind would seek for mental recreation and beguilement—a daily walk or ride, an occasional break into the country with gun or fishing-rod or alpenstock. But if these are no more than sufficient for the healthy and the strong, what hope, what chance remains for those who have been allowed to grow up feeble and imperfectly developed? How can they expect to encounter the wear and tear, the 'jar and fret' inevitable in the path of every working man?

"There are many forms of mal-growth, more or less grave, to be seen in every school, all demanding rectification, all susceptible of being rectified during this period of life by systema-

tized exercise. I would instance particularly pigeon-breast, or undue prominence of the breast-bone, accompanied usually by flatness of the ribs of the upper region of the chest. I have been able to trace this mal-formation of chest to several causes, such as tight clothing during infancy and childhood, and in many instances to the straining coughs which attend what are familiarly called children's complaints, i. e. Hooping Cough, Measles, Dentition, etc. Hollow-breast, which is the obverse conformation of Pigeon-breast in front, accompanied usually by the same flattening of the ribs. This is usually produced by causes similar to the preceding. Drooping shoulders, sufficiently expressed in its name, and produced by shoulder-straps or any arrangement of bands or bandages which confined the action of the shoulder-joint in childhood. Stooping, which at the same time implies such a manner of carrying the head and neck and upper portion of the trunk, as that they are not in a line with the rest of the column of the body-the chief evil consequence attending the position being the depression of the upper part of the the thorax in front. With these may be named some of the forms of Spinal Curvature, often proximately dué to weakness of the dorsal muscles or to inordinate and unregulated growth. Rapid growth itself, if unattended by relative development, is not only in itself an evil, but is the source of many others. It is no uncommon thing to find a lad at school growing at the rate of six or eight inches in the year. Now it may be stated that the smaller of these numbers is incompatible with fair development and health; the whole resources of the body are drawn in one direction, furthering one process, the upward growth. Nay, when this process is extreme it will be seen to be most intensified up the center of the body, an idea that might seem fanciful were it not almost daily presented to me as a fact.

"Another feature of rapid upward growth is that the chest scarcely expands at all during the process. It will be seen to

run up from the waist without any expansion whatever, while the shoulders fold round to the front, and the head stoops forward from the base of the column of the neck; and seldom does a straight spine accompany such abnormal growth. have known the chest actually diminish in girth-grow narrower and narrower—as if it were tightened up by the extreme elongation of the general frame. Now the reason for these displacements is, that all these parts are held in their respective places by certain muscles arranged for this purpose; and as the muscles can only maintain their contractile power by frequent and varied exercise, they cannot do this duty if they are denied that which is necessary to their functional ability. This law, which does not apply to these parts alone, but to every part of the body, is markedly seen in the muscles of the trunk. Were these duly exercised, stooping would be impossible, that is, continuous stooping, which involves the origin of many evils of development. Because, if the muscles of this region possessed their proper degree of power, they would of course perform adequately their functions—and one of these is to keep the body upright. It is as useless therefore to tell a boy thus imperfectly developed 'not to stoop' as to forbid him to cough when he has a cold, or to limp when he is lame.

"Another abnormal form of growth, but much less frequent, is the opposite to the foregoing—is where the frame seems stunted from its natural height. This dwarfed and arrested growth will be found to have arisen in the majority of cases from some cause which interfered with the proper nutrition of the general system, and it in consequence may be inferred that any means which will restore this condition will restore the naturally attainable capacity for growth and development in the frame, so far as this may yet be extended over the natural period of growth still remaining. *

^{*}A remarkable instance of this came under my observation a few years ago. A youth whose growth had for some time been stationary at the height of 5ft. 2\frac{1}{6}in., suddenly from the practice of systematized exercise began to

"Growing to one side, as it is called, is another form of malgrowth frequently to be seen, consisting of a disproportionate development, if not of actual elongation of one side of the body. I have not been able to trace this conformation to unusual employment of the side where the development preponderates, as would be expected; where I find this conformation it is usually with boys who take little or no exercise. No form of mal-growth however is more susceptible of rectification by skillfully-administered exercise. Like all departures from normal growth, this evil extends beyond itself and is productive of other evils. Lateral spinal curvature is one of its frequent results.

"There are many other forms of mal-growth and partial development, all open to the curative influence of systematized exercise, to be seen with painful frequency in every school, less striking it may be, but all of importance, and all claiming the serious attention of those who are entrusted with the care and education of the young. In partial development alone-where no trace of mal-growth and no indication of mal-formation exists—an argument more powerful than any which I have advanced, or can yet advance, exists for the adoption of a clearly-defined system of bodily training at our large Schools. I find that almost every youth at the time of passing from these to the University has, as it were, a considerable amount of attainable power and material capacity undeveloped; his body, or rather a portion of it, is in arrears in this respect, and as arrears and as a recoverable debt the youth may fairly view it. A large installment of it he may obtain almost immediately. I find that during the first Term (two months), with properlyadministered systematized exercise, the chest will expand, under all ordinary circumstances, two inches, and under pecul-

grow at a fair and regular rate, and at the age of 21, when he went to India, his height was 5ft. 6½in. Another instance is that of a school-boy whose growth had been all but arrested from a severe fall in childhood. Almost instantly systematized exercise started his latent powers of growth, and in nine months he had grown 8½in.

iar circumstances I have known it to reach double that amount. The general rule also is that where the chest has been neg lected and is consequently in arrears in development, the arms and shoulders will have shared the neglect and so of course show a proportionate want of development. And these, as they share in all the work of the chest—are in fact the medium through which the chest receives almost all its exercise—share in the gain proportionately. Now had these parts received an adequate share of employment up to this time this sudden development would be impossible, and it must have been arrears of expansion, otherwise the rate of increase would be sustained after the first Term, which is not the case.

"But it is not only, or even chiefly, for the the faultily-grown, the imperfectly-developed, and the weak-although to these it is a necessity, a necessity if they are ever to be strong—that I plead for the regular adoption of a system of educational bodily exercise in our Schools. What should we think of that schoolmaster, who, because a boy was apt and capable, and for his years well-instructed, would therefore and thenceforward leave him to his own resources and inclinations? Yet in truth similar are the reasons we constantly here adduced when physical culture is mentioned. We hear men say, 'All exercise should be free, should be voluntary, should be left entirely to a boy's own choice, inclinations, and disposition.' Do we leave him the same license with the other agents of health? his diet, for instance, or his hours of rest or of study? Yet none of these are more important to his welfare and well-being, present and future, than exercise. * Whatever may be the developed capacity of the untrained body, it is as far from the symmetry

^{*}In fact there are many boys, more than one inexperienced in such points would easily believe, who if left to their own inclinations take no exercise at all, or take it so listlessly that the results are nil. Yet these are the very boys that need exercise the most of all, and their reluctance to enter upon it, and feebleness and awkwardness in pursuing it, is the strongest proof of their great need of it, the strongest proof that as boys they are not living boys' lives—and the boy's life leads to the man's.

and strength to which it may attain with proper culture, as is the elever but self-taught man from what he would have been with thorough educational training. Certain points in his character stand out large and prominent, powerful in a given line of action, but others are dwarfed and stunted, and show the more meanly from the prominence of others. So it is with physical development and with physical culture: the assiduous and exclusive application to a favorite exercise will strengthen and develop the parts engaged in its practice, but this presupposes the neglect of the remainder, and the result in both cases, the mental and the physical, will be the same—inharmoniousness, incompleteness.

"It might be a task not unworthy the attention of medical men to enquire if this partial and inharmonious condition of bodily development is not the cause of many forms of debility and also of some of the active ailments of life-the origin of the phrase, so pregnant with meaning, though happily not of literal accuracy, that 'every man has his weak part.' Indeed, I should be disposed to consider the man whose frame is generally and uniformly weak, safer than he whose frame is partially and locally strong, because the natural tendency is to gauge and estimate the general strength by the power of the strongest part. And just as the strength of a rope or chain is but equal to its weakest part, and just as the dependence will be on the general strength of the rope or chain, and its weak point be unnoted until its failure, so will the voice of the weak part of the human body be silenced by the general claims of the rest until the time of exposure and trial.

"That special provision has not been made at our Public Schools for the full physical training of youths has arisen from no carelessness or neglect on the part of the earnest-minded men conducting them, but simply because it has not hitherto been recognized as a want—as a thing to be taught or directed or supervised. The very phrase recreative explains the whole

extent of the want as at present comprehended, and the provision made to meet the want; but to the extent of this recognition it has been met at the Public Schools at any rate with a completeness which leaves little to be desired. Schoolmasters know from the best of all sources, practical experience, that unless boys have ample play-time and play-space the tone and energy of mind and body sink, and the school-work suffers; and therefore an ample playground and a fair allowance of play hours, for such as will avail themselves of them, are held as important as a commodious schoolroom or a well supplied table.

"England may well be proud of her Public Schools, for no other country has anything comparable with them, indeed has neither the schools nor the scholars, nor the families nor the fire-sides from which the scholars are drawn. For we must go far back—far as the home-habits and home-teaching of ancestors in forgotten generations—if we would get at the origin of character. Out of England we never find boys, only little men, embryo soldiers, lawyers, and doctors, with the specialties of their avocations sprouting upon them; and their schools have nothing in common with ours, present no point of resemblance. The Public Schools of England are to it what the heart is to the human body—the center and source of its vitality and power, the spot through which its life-blood flows, from which is distributed to every spot, near or far, the young, fresh, bright stream to strengthen, to revivify, and to renew.

"I have dwelt thus long upon what I conceive to be the necessity of providing a regular system of physical education in connection with the purely mental culture of schools, because it is at this period of life, and it is under a school regime that it is most needed, and would most powerfully influence health and strength, present and future. And I have spoken thus strongly of what I conceive to be the error and the danger of exclusive or undue culture either of mind or body, because it is at this period of life, and it is under such circumstances, that

the deepest and most lasting impressions are received and the most enduring tastes and habits acquired; habits and tastes that will almost inevitably be carried into succeeding stages of life, and be intensified at every stage. In the University this is markedly the case; here the youth who at school devoted his time and his thoughts exclusively to study, leads an existence still more artificial, now become to him almost a natural one, for the law of adaptability smooths down many things that are irksome when first essayed. Being now free, or more correctly speaking, having now none to over-rule and few to advise, he follows his own inclinations, and this the more keenly that these are the same which have already guided him to distinction. He came up with a school reputation for ability, and this must be preserved, must be confirmed and extended, for school-honors are not the fee, only the earnest-money of the bargain yet. to be fulfilled; its eclat is only the god-speed encouragement at a hopeful starting, not the congratulatory cheer at triumph gained. And no one knows this better than the youth himself, and better than himself no one knows that not by talents alone, not by genius alone, was he enabled to plant his foot on the vantage-ground which he occupies, not by these, but by labor; and knowing this he believes that what he thought necessary before to win, is no less necessary now to keep; so the old rule of exclusive brain-work is re-begun. All the early day he reads; only in the afternoon does he go outside the College walls, and then only for a hurried, feverish walk-a very nightmare counterfeit of true exercise to the wants of a frame like his. His lamp is lit at the setting of the sun and scarcely extinguished at its rising. Does he never think when the wick is burned down and the oil is consumed, when the one is renewed and the other is replenished, does he never think, I wonder, as he sits with the wet towel around his forehead and sips his green tea, stimulating and urging the weary brain to.

greater effort, that the lamp of life within him needs trimming and renewing?

"What is the other extreme? For we read in the evidence laid before the Public School Commissioners that boys who expect to excel at cricket must spend seven hours a day in the cricket-field. 'My boy shall cultivate his body.' Parents may have their wishes in this direction carried further than they anticipated. 'My son spends his days on the river,' writes one to me, a clergyman with his quiver well filled, 'his success in life depends on his success at Oxford, and I tremble as the time approaches for him to go into the Schools.'

"These are two extremes, but they divide not the University between them. The devoted bookworm and the devoted athlete are equally removed from another class—a fast diminishing one let it be thankfully recorded—a class which cultivates neither mind nor body, with whom the day is frittered away and the night dissipated, with whom time passes without purpose, or profit, or pleasure;—at least such purpose as a man should deign to pursue, and such pleasures as he should condescend to accept. Nothing now, leading to nothing hereafter: the mental advantage nothing, the physical advantage something less than nothing. 'Why cumbereth he the ground?' Year by year, term by term, this class is diminishing. Year by year, term by term, its antithesis is increasing, the true class, the true men, the men well worth devoting life to form, the class well worth devoting life to increase. For as the bookworm had his antithesis in the enthusiast athlete, so has the idler his in another type, in the man who feels that he is a man, a man with a body as well as a brain, muscles as well as nerves, and who has no intention of sacrificing either to the other, or either for the other, even if such immolation could be to its advantage. But he knows to the contrary, he feels to the contrary. He feels and knows that by friendly rivalry and interchange of labor and of rest both are benefitted; that each may

be fully cultivated without infringement of the privileges of its companion, but rather to their mutual gain and well-being. Therefore he has no intention to hazard brain-fever or breakdown of any kind from reckless mental effort, just as he has no intention to subject himself to the ignominy of a possible failure in the Schools. He has no faith in delaying until the last min ute and then as the phrase goes 'reading his head off.' He has still less in 'passing by dint of good luck.' And he has least of all in trusting to 'natural sharpness' which on mythical occasions is reputed to have 'floored the Examiners.' He knows that there is a given amount of work to be done in a given time, and he knows he can do it if he begins at once, and with regulated effort works steadily on to the end. And this he means to do, and this he does.

"I select for illustration the Universities thus specially, as they are perhaps more distinctly an extension of school-life than the early stages of any of the professions or callings which imply intellectual labor for actual employment; and because it is there I have been able to test by practical observation, over a very long period, the opinions I now venture to advance. A complete change in a boy's habits we occasionally see, an utter reversal of all antecedent tastes we sometimes hear of, but, in the great majority of cases, school-habits and school-tastes become consolidated and confirmed into traits distinguishing more advanced life. In more senses than one 'the boy is father to the man.'

"In the second stage, the one immediately succeeding school-life, while the upward growth, although nearly at its close, is still going on, an amount of benefit, second only to that obtainable in boyhood, may be obtained from the regular practice of systematized exercise. It matters not whether the youth be reading for a University degree, or has passed at once to his future profession, his frame is still growing, still changing, still pliant, still impressionable, still liable to be checked in

its natural development, and stunted or turned aside from its true proportions, by inactive, sedentary, or exclusively mental pursuits, and still capable of having growth and development powerfully stimulated, and still susceptible of being rapidly advanced healthward by systematized exercise.

"As life advances, and as the frame becomes mature with all its structures complete and consolidated, susceptibility of material change diminishes, and actual gain in bodily power is comparatively uncertain and slow. But there is no period of active life in which a man may not profit by systematized exercise if judiciously pursued; only let him use the same discretion in this as he would in practicing any exercise of any other kind, abiding by the simple movements of the earlier courses, and leaving to lither limbs and more elastic frames those where the demand for effort is sudden or great. And let him not be disappointed if his progress is slow, or discouraged if he sees younger men passing him on the road; he must remember that he starts late and it is with him at best the alternative of 'better late than never;' but late is late and implies disadvantage; he is trying to do, as well as he can, what could only have been done perfectly in its proper season, and that has passed away. The educational time of mind and body is the same, the growing time; but just as we see men whose opportunities of mental culture in early life have been small or neglected, in a measure retrieve the loss by later efforts, so may the neglected culture of the body also be retrieved by after endeavors, if judiciously and perseveringly made.

"A most important principle in Exercise, and one which should ever be borne in mind, is, that it should be regulated by individual fitness, for the exercise that scarcely amounts to exertion in one person will be injurious and dangerous to another. *

^{*}A painful instance of this nature was brought before me some time ago. A man boasted to me that he and his son—the father a strong hardy man, the son a lanky and loose grown lad of thirteen years—had just walked from London to Oxford in one day—a distance of nearly sixty miles. Before the

And not only is this inequality observable among different individuals, but, as we have already seen, the same individual may have parts of his body possessing special power or presenting special weakness. A man may have limbs capable of transporting him at the rate of four miles an hour throughout the day, and for many days in succession, but with heart or lungs all unequal to the effort. Or he may have an organization so frail, and a temperament so susceptible to stimulation or excitement, that the one is an abiding danger to the other.

"It is every man's duty therefore (nor is it a very hard one) to endeavor to ascertain the nature and extent of his physical resources for his guidance at all times, but especially when contemplating any special and exceptional exertion. And it is from the non-observance of this principle that we hear so frequently of accidents and cases of serious indisposition after unwonted physical effort. If any one whose habits of life have been of a comparatively sedentary nature, suddenly, and without any preliminary preparation, resolves to change these habits for active ones, he will unquestionably derive harm from such an attempt, simply because, in doing so, he is infringing those principles which alone can make it useful. Thus, if he attempts an exercise which is suited to one whose frame, from regular and continuous practice, is capable of performing it without fatigue; if he makes a demand upon his heart and lungs that is beyond their power to sustain, because he sees another man make the same requisition upon his well-trained organs of respiration and circulation; or if he selects a certain time of the day for exercise because it best suits his business arrangements, although his brain may be weary, his mental energies exhausted, and his bodily energies depressed, how can aught but disappointment be the result? The stomach when enfeebled by fasting cannot all at once digest a copious meal;

year was out they made another journey together—a short one this time—the son carried before, the father, broken hearted, following. The boy had never recovered from the exhaustion of that day.

the lungs weakened by illness and in-door confinement cannot breathe all at once the external air; the mind depressed by grief cannot all at once be trusted with the full tale of glad tidings. Yet a man does not hesitate to change the habits of every organ of his body as hastily as he would change an ordinary garment, and then to express surprise and disappointment if benefit be not the result of the change.

"The infringement of this principle, that 'Exercise should be regulated by individual fitness, that it should be approached gradually and increased only with increasing strength,' has been the cause of much perplexity and suffering. Scarcely a sum mer passes without our attention being drawn to some victim of its transgression—some one who has escaped suddenly from his desk or study, and, without preparation, or gradation, or precaution of any kind or degree, has betaken himself to mountainclimbing, shooting, boating, or some other exciting pursuit, to break down in the effort, or to struggle through it and sink down for many a month and day after it, his powers overtasked, his energies exhausted. Now for the brain-tired, city-worn, business-weary man, these are the pursuits which he would do best to follow, and these are the scenes among which he would do most wisely to mingle, did he do so in accordance with the dictates of reason, and in obedience to the laws by which health and strength are maintained.

"This is however the abuse, not the use of a valuable custom which is yearly extending, and extending, too, among the very men who need it most and to whom it will yield the most immediate and lasting benefit; a custom which if adopted judiciously will give a healthful fillip to the flagging energies of both mind and body. We call it 'change of air,' and the term is just as good as any other, but it very imperfectly expresses the extent of the change, for it is change of everything—everything we see or hear, taste, touch, or look at, person,

place, or thing—change of everything we undertake, undergo, and (probably) understand.

"But even when these holiday-breaks are made most sensibly they must not be regarded as the all-in-all of the exercise to be taken. A man cannot in a week or two eat sufficient food to supply the demands of appetite for a whole year, neither can he take sufficient exercise to keep his body in health throughout the four seasons in a summer's ramble. These mountain excursions or sea-side sojourns must be in addition to, and involving no curtailment of, the daily walk to or from business, the daily ride to or from somewhere, or the daily employment with or at something; a something which will in its doing quicken the pulse and augment the breathing, and, if possible, bring the perspiration to the forehead.

"Exercise may be favorably connected with other agents of health, such as bathing, in the practice of swimming; and with fresh air in country ride or ramble. To men living in large cities—the men of course whose need of exercise is the greatest-it seems but a tantalization to recommend a country ramble; but there are a great many men pining for want of proper exercise who do not live in large cities, and there are a great many others who spend but a portion of their time there, with whom an occasional break along the green lanes in the saddle, or across the meadows on foot, would be a matter of easy accomplishment. Men do not know what they possess in these cross-country by-ways, and in the power of traversing them on foot-the pleasure, the profit of walking-the first exercise enjoyed in life, the last that is freely taken. But a walk to be a real enjoyable exercise must be a country walk, a country ramble in fact—the antithesis to the 'constitutional' of a measured mile of way on the dusty road-going where fancy prompts and inclination leads, forgetting alike past mental labor and present physical effort in the successively recurring objects of interest

that will rise at every turn of the path. The country walk is an exercise entirely our own-purely English-originating, doubtless, in many favorably concurring circumstances, mental and material; such as love of country-life and country-scenes, of natural objects in their natural places and in their natural aspects, and also from that blending of the thoughtful with the practical elements of character which is peculiar to our own race; and doubtless also to the facilities presented for indulging in by-path pedestrian peregrinations. I have wandered on foot through many a land but have never seen these dear old stile-paths in any but our own, nor have I ever met abroad the man who cared for them, or could comprehend any pleasure in this source and this scene of exercise. The country walk is good for both mind and body, clearing the brain, and quickening the pulse by the same means. If a man wanted an aid to thought, a help 'to enable him to look all round a point difficult of access, and at the same time find the antidote to close mental application, I would say 'Vault the first stile in the first meadow and let your mind track out the windings of the way of your subject of thought, even as your undirected feet might track out the windings of the unsurveyed path on the greensward -through meadow and field, through coppice or common, by river-side or plantation-row—the villager's right of way, secured to him by right of immemorial usage.' For the young and for the middleaged, for the one as a change from his more energetic and concentrated physical exertions, for the other as a means of bodily exercise and mental beguilement, I know no better recreation.

"I have spoken of the irregular and indiscrete yieldings to the natural instinct for physical exertion which is to be found in almost every nature—subdued, it may be, but not dead—and waking up and asserting their claims on every favorable occasion; but the evils which come from these are not so great or so startling in their results, nor do they seem so blamable a transgression, as when these instinctive cravings are blindly and

persistently ignored. How many, how marked and how painful, are the proofs of this, daily recurring. How many gifted men have broken down and are daily breaking down with their life's work only half done, when they might, humanly speaking, have completed it with ease and success, had they not carried it on in utter disregard of the fact that to insure health of mind they must possess health of body, and at the same time set at naught the laws which the Creator of each has made the conditions of its healthful existence.

"I do not need here to quote from the long list of men of every rank and profession whose useful and valuable careers have been brought to an untimely close by death, or more often, and perhaps more sadly still, by the permanent ill-health which baffles all medical skill and science, which springs from, and is at the same time a cause of, 'a mind diseased.' Numerous are the instances which have fallen under my own notice of individuals who have thus fallen victims to their own shortsightedness. One of them, long famous in the scientific world, absolutely refused to give his mind the intervals of repose which were seen to be essential by all who were capable of judging. 'The night cometh when no man can work' was his answer when urged to give his physical condition some attention; and the night did indeed come: but his working day might, and would in all human probability, have been very considerably prolonged had he been less blind to the laws of his existence; for the last years of his life were passed in the mental night of second childhood.

"All this, however, it will be seen, only points the more emphatically to the necessity of a regular system of physical training at the proper time, that time being the period of the body's growth and development. And here I would call attention to the manner in which this principle has been comprehended and observed in the Army, where the efforts of the authorities have been mainly directed to the introduction of the system at the

depots, where the raw country lads come in from the recruiting districts. It is not more directly valuable to the soldier at the outset of his career, than to those who are preparing for no less arduous, although very different duties in the campaign of intellectual life.

"And there is yet a third direction in which it should be carried; there is yet a third class to whom it would be a boon of the greatest value; to men in offices, and warehouses, and shops; men whose school-life terminated in boyhood, and with whose school-life were relinquished or lost the habits and the opportunities which are essential to full bodily vigor, and who in their business avocations, obtain little or no physical employment of a health-giving or invigorating kind; men who spend the whole day, and, it may be said, every day throughout the year in the same round of occupations, and to whom not even the once-a-year holiday of a week or two in summer is allowed. To men thus employed, systematized exercise conducted on a rational system would be of incalculable value.

"Gymnasia organized for the use of this class of learners, however, would have special difficulties to encounter, for here would be absent the control which would be available in school gymnasia, and the habitual discipline observed in military ones. For it must not be forgotten that there is always to be found, in every group of men or boys, some who are more eager for momentary distinction than for permanent improvement; always some whose efforts, if not judiciously controlled, would be determined by susceptibility to excitement rather than by bodily power; and where the attendance would be entirely voluntary, the management of such learners becomes doubly difficult. Indeed there is but one means of obviating such difficulty, and that is by a system where the exercises are carefully graduated and strictly progressive; where every man, weak or strong, would work within the actual circuit of his own capacity. Another difficulty with, or rather drawback to these Gymnasia is, that the time available for recreation with men engaged in business is almost limited to the evening, the time least desirable for exercise, for then the bodily energies have become depressed, and the mental faculties subdued—the time and the condition when the mind is least able to stimulate the physical effort, and when physical effort reacts least favorably on the mind. But this is a difficulty that in a measure is already passing; social changes are from year to year taking place which are rendering the continuous hours of labor in many occupations less severe and less prolonged. Employers, it is found, have not been ruined, as was sagely anticipated, by the early closing of offices and shops, and the Saturday half-holiday has neither undermined the morals nor ruined the constitutions of those to whom it has been extended.

"Many years ago I instituted a series of measurements, by which I could ascertain the state of the development of all pupils at the commencement of their instruction, and these measurements being repeated at given intervals, I could know the rate of their advancement. The revelations made by this system of periodic measurements have been such as to sustain me in devoting my energies to the completion and extension of this system of exercise. I find that to all, child or adult, weak or strong, it gives an impetus, a momentum in the development of his resources, which nothing else can give; and which nothing can take away, because it is not a thing acquired, a mere mental or physical addition;—it is the man altered, the man improved, the man brought nearer to the state he was designed to hold by the nature of his organization. And I think I cannot do better than give the instance of those soldiers who first received a course of training on this system.

"The first detachment of non-commissioned officers, twelve in number, sent to me to qualify as Instructors for the Army were selected from all branches of the service. They ranged between nineteen and twenty-nine years of age, between five feet five inches and six feet in height, between nine stone two pounds and twelve stone six pounds in weight, and had seen from two to twelve years' service. I confess I felt greatly discomfited at the appearance of this detachment, so different in every physical attribute; I perceived the difficulty, the very great difficulty, of working them in the same squad at the same exercises; and the unfitness of some of them for a duty so special as the instruction of beginners in a new system of bodily exercise—a system in which I have found it necessary to lay down as an absolute rule, that every exercise in every lesson shall be executed in its perfect form by the instructor, previous to the attempt of the learner; knowing from experience how important is example in the acquisition of all physical movements, and how widely the exercises might miss of their object if unworthily represented by an inferior instructor. But I also saw that the detachment presented perhaps as fair a sample of the army as it was possible to obtain in the same number of men, and that if I closely observed the results of the system upon these men, the weak and the strong, the short and the tall, the robust and the delicate, I should be furnished with a fair idea of what would be the results of the system upon the Army at large. I therefore received the detachment just as it stood, and following my method of periodic measurements, I carefully ascertained and registered the developments of each at the commencement of his course of instruction, and at certain intervals throughout its progress.

"The muscular additions to the arms and shoulders and the expansion of the chest were so great as to have absolutely a ludicrous and embarrassing result, for before the fourth month several of the men could not get into their uniforms, jackets and tunics, without assistance, and when they had got them on they could not get them to meet down the middle by a hand's breadth. In a month more they could not get into them at all, and new clothing had to be procured, pending the arrival of

which the men had to go to and from the Gymnasium in their great coats. One of these men had gained five inches in actual girth of chest. Now, who shall tell the value of these five inches of chest, five inches of additional space for the heart and lungs to work in? There is no computing its value, no power of computing it at all; and before such an addition as this could be made to this part of the body, the whole frame must have received a proportionate gain. For the exercises of the system are addressed to the whole body, and to the whole body equally, and before this addition could be made to the chest every spot and point of the frame must have been improved also—every organ within the body must have been proportionately strengthened.

"But I tried another method of recording the results of the exercises. I had these men photographed naked to the waist shortly after the beginning of the course and again at its close; and the change in all, even in these small portraits, is very distinct, and most notably so in the youngest, a youth of nineteen, and as I had anticipated in him, not merely in the acquisition of muscle, but in a re-adjustment and expansion of the osseous framework upon which the muscles are distributed.

"But there was one change—the greatest of all—and to which all other changes are but means to an end, are but evidences more or less distinct that this end has been accomplished, a change which I could not record, which can never be recorded, but which was to me, and to all who had ever seen the men, most impressively evident; and that was the change in bodily activity, dexterity, presence of mind, and endurance of fatigue; a change a hundredfold more impressive than anything the tape measure or the weighing chair can ever reveal.

"Up to this point I have spoken but of the beneficial results of exercise as affecting the man, without special reference to his professional duties as a soldier; and I have done so purposely, because it is thus far that systematized exercise is valu-

able to all alike, and also because it will in a moment be seen that the power of the man and the serviceability of the soldier are inseparable conditions. Our embodied idea of energy, activity, and strength, is the soldier, these qualities trained to, made subservient to, the exigencies of his profession; and these qualities are the inevitable results, the incontrovertible results of that system of bodily training which I advocate, because the system itself is based upon, and all its directions are in accordance with, the natural laws which govern the growth and development of the human body. Endow a man with these qualities. therefore, and you endow him with the power of overcoming all difficulties against which such qualities can be brought to bear, against all difficulties requiring strength, activity, energy, dexterity, presence of mind, tenacity, and endurance. You cannot limit a high qualification to a single use any more than you can limit the purpose to which a good coin may be applied: it will fetch its value anywhere and in anything. And so will strong muscles and sound lungs-in garrison, in camp, or on campaign, on the march, in the field, in the transport, in the hospital, on any service, in any climate.

"The same qualities which are so valuable to the soldier are no less valuable to the youths who are about to enter on the campaign of intellectual life. It matters little whether the fight is to be fought out in the plains of India, or in the green lanes of a country parish in England. I shall never forget the reply of a soldier to a question of mine, when inspecting the first squad of men who had passed through a brief course of training, at the gymnasium at Warley Barracks. I asked him if he felt any stronger for his practice? 'I feel twice the man I did, Sir,' was his reply; on my further asking him what he meant by that—'I feel twice the man I did for anything a man can be set to do.'

"It was just that. The man was stronger, therefore he was

not more able for this thing or that thing only, but for 'any-thing which a man could be set to do.'

"And the evil which is most to be dreaded, viz., strains, is precisely the very evil which should not occur—the very evil which with properly administered gymnastics could not occur, -which, in my entire professional experience, with the thousands of young and old, weak and strong, who have passed through my hands, has never in the smallest degree occurred, -the very evil in fact which should be prevented from occurring in other exercises, even by the resultant benefits of these, because by them the parts liable to injury on effort would be strengthened and an inherited liability removed; for the universal law regulating growth and development is paramount here, -the natural and suitable exercise strengthens, the false or undue exercise weakens and injures. I repeat, falls and broken bones are not the evils to be dreaded from these hazardous exertions. Falls are seen, and broken bones can be mended; the thing to be feared is the strain from sudden, unregulated, or over-stimulated effort; an evil which at the time of its actual occurrence may never be known, or if known, concealed, for the young have a dread of such incapacitating injuries, but which whether concealed or revealed, understood or misapprehended, felt late or soon, will surely appear; it may be to mar the hope and the happiness and the usefulness of all the life to come.

"Now what is the actual demand made here upon a boy's time? One hour per week. And this under ordinary circumstances and under ordinary conditions of health and growth is all that is required. But this implies that it will be begun early, begun with school-life, and through school-life continued.

"In these arrangements there is one point which should be borne in mind, namely, that the lesson should not be taken from what is called play-time. Nothing should be taken from play-time, and nothing should be introduced into play-time but play. The lesson should be taken from actual school-time and

should be regarded and reckoned as actual school-work. This alone, as a rule, will win from boys that spirit of earnestness in its practice, and yield to it that unenforced but none the less effectual means of discipline which real work claims and secures.*

"In our day, if gymnastics mean anything,—that is, anything worth the serious thought of parent, teacher, or pupil,—they mean a gradual, progressive system of physical exercise, so conceived, so arranged, and so administered, that it will naturally and uniformly call forth and cultivate the latent powers and capacities of the body, even as the mental faculties are developed and strengthened by mental culture and mental exercise."

But while we may grant the benefits claimed for college gymnasiums and college athletics, and while we are ready to recognize heartily the necessity for robust health and a well-formed body, if we are to make ourselves felt in the calling, no matter what that calling shall be, which we may choose for our life work, yet many of us can truly say that it is out of the question for us to take up boating; that our circumstances are such that base-ball and foot-ball are impracticable; that we have access to no gymnasium; while at the same time we have frequent reminders that our physical status is even now become more or less a reproach to us, rather than a sceptre of power. It is all very well to show us that this state of affairs is a grievous one. In fact, we had had before an undefined sense of misfortune in the loss of that fine physical elasticity which makes every work a delight. But placed where we can have no advantages for physical training, is it possible for us to recover and maintain such a physical balance as has been set before us? Let the answer come unhesitatingly that just this can be accomplished by any man, no matter how unfavorable his circumstan-

^{*}This plan I pursue in my own school, and with the most satisfactory result. Not only does the lesson take place in the regular school-time, but the boys are marked on the same scale, and in the same manner, for their conduct and position in the class, as for any ordinary school-lesson.

ces, if he has the grit, not merely to covet earnestly the best gifts, but to take a little trouble to secure them. There is no investment of time—a few moments each day—which pays a larger dividend upon the amount invested. The prompt and munificent returns are apparently out of all proportion to the amount of exertion on our part. As though Nature were waiting to meet us more than half-way whenever we become willing to abandon our treason against her.

"Better to hunt in fields for health unbought,
Than fee the doctor for a nauseous draught.
The wise for cure on exercise depend;
God never made His work for men to mend."

Just what exercise, then, shall be taken to secure this greatly coveted endowment of physical vigor?

First of all, it must be exercise that (not to some one else, but) to you is stimulating and exhilarating. As I write these lines I find this paragraph going the rounds of the papers:

"The cheapest and best gymnasium in the world—one that will exercise every bone and muscle in the body—is a flat piece of steel, notched in one side, fitted tightly into a wooden frame and, after being greased on both sides with a bacon rind, rubbed into a stick of wood laid lengthwise on a sawbuck."

That statement may do very well just for fun. It may be very good nonsense. What is to be deplored is that it would be considered, by the great majority of those under whose eye it might fall, as a humorous statement of what is really good sense. In this they make a mistake whose cost to them is often the difference between a forceful life and a feeble life. Seriously taken, the statement contained in this little squib is cruelly false. In the same category belongs that other "joke" about a boy's hands blistering so much more quickly upon a hoe-handle than upon the bat he swings in a game of ball. They are worthy of being stigmatized as cruelly false because they formulate, covertly, an opinion finding daily expression in

actual life, which sets down the difference between a saw-horse and a game of ball as nothing more than the difference between work and play—as an idea merely, as solely a creature of the imagination. And so the boys are made to suffer by this mistake, and the men of sedentary occupations make themselves to suffer by the same mistake. So vigor and joyousness are cramped. So is it cruelly false. The fact is that the hoe-handle dwarfs, distorts, stiffens and crooks, while the game of ball makes for an elastic, symmetrical, splendid development.

No saw-horse drudgery will ever do you anything but harm. No garden patch that in your heart of hearts you secretly hate, will ever repay your devotion with one particle of added elasticity. Crying babies give this great nation more exercise than it gets from all other sources combined, outside of the regular daily tasks; but no one ever heard of fathers and mothers progressing toward physical perfection under the discipline of crying babies. The fact is, there are two kinds of physical Mark the distinction, for it is generally overlooked. There is the exercise which depresses, and the exercise which exhilarates; the exercise which leaves us with the consciousness that a certain definite drain has been made upon our strength, and the exercise which reinforces us in every fibre, without the abstraction of a grain of vital force. Grasp clearly this distinction between the exercise of exaction and the exercise of replenishment. For it is a distinction involving a vital difference, one which is strangely overlooked. Failure to make this distinction has caused many good resolutions to be abandoned in sheer discouragement. They are legion, who, having had the matter placed before them, resolve to do their duty in this thing, and honor their bodies and disenthrall their intellects, but unwittingly select some form of exercise which, for them, is the exercise accompanied by a drain and followed by depression. Disappointed in the results anticipated, they gradually drop back into the old physical ways, without a logical review of the matter to discover, if possible, where the discrepancy lies. The whole thing is allowed to go by default. The recognition of the differing quality of different forms of exercise would be a revelation to many who have been more or less consciously perplexed because of the discrepancy between their theories of the benefit which should result from physical exercise, and their failure to receive positive good when they try to put these theories into practice.

We have looked upon exercise as a matter of muscle only; or at least as affecting immediately only muscle. Whereas the influence of physical exercise is just as immediate, and almost as great structurally, upon the gray matter of the brain, as upon the biceps. Du Bois-Reymond says: "It is easy to show the error of the common view, and demonstrate that such bodily exercises as gymnastics, fencing, swimming, riding, dancing, and skating are much more exercises of the central nervous system, of the brain and spinal marrow. Every action of our body as a motive apparatus depends not less but more upon the proper co-operation of the muscles than upon the force of their contraction. In order to execute a composite motion, like a leap, the muscles must begin to work in the proper order, and the energy of each one of them must increase, halt, and diminish, according to a certain law, so that the result shall be the proper position of the limbs, and the proper velocity of the center of gravity in the proper direction." As the nerve centers are greater than the muscles, by just so much does the import and benefit of physical exercise pertain more to nerve-tissue than to muscle-tissue. Physical exercise or non-exercise means brain-gain or brain-loss just as truly as it means musclegain or muscle-loss. If we eat without relish we get harm rather than good; if mind and muscle do not enter upon their exercise with honest appetite, no feeding of the frame should be expected. Only with this proviso is the saying of Maclaren true: "Let no man be afraid to exert himself lest 'it take it out of him.' There is nothing in him that will not be replaced with interest by the very process of extraction."

While I write these lines, a man of large business interests tells me that he is feeling better than for years past. He has been abusing himself by overwork and worry, and under exercise ever since he entered college some twelve years ago. He has lately bought a fast horse and a cart, and drives to and from his mills, some three miles or more distant, at a furious pace. To use his own words, he "walks into the factory feeling as if he could knock down every man in it!" He has found an exercise which for him is exhilarating; and the nervetissue changes it produces are plainly in advance of the muscular.

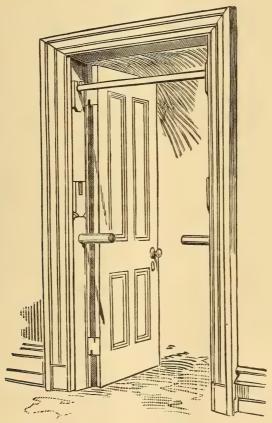
Understanding the necessity of selecting that exercise which shall be for us the most appropriate and stimulating, what are some of the best modes of exercise from which to make a selection?

We may have, if we will, a home gymnasium. I quote from William Blaikie, in his excellent work, "How to Get Strong":

"All that people need for their daily in-door exercise is a few pieces of apparatus which are fortunately so simple and inexpensive as to be within the reach of most persons. Buy two pitchfork handles at the agricultural store. Cut off enough of one of them to leave the main piece a quarter of an inch shorter than the distance between the jambs of your bedroom door, and square the ends. On each of these jams fasten two stout hard-wood cleats, so slotted that the square ends of the bar shall fit in snugly enough not to turn. Let the two lower cleats be directly opposite each other, and about as high as your shoulder; the other two also opposite each other, and as high above the head as you can comfortably reach.

"Again, bore into the jamb, at about the height of your waist, a hole as large as the bar is thick. Now work the auger farther into each hole, till it reaches the first piece of studding,

and then an inch or so into that. Find how many inches it is from the jamb to the end of the bore in the studding, and cut the second fork handle in halves. Pass one-half through the



hole in the jamb, and set its end into the hole in the studding. Bore a similar hole in the other jamb directly opposite, and repeat the last-named process with its nearest studding-piece, and adjust remainder of the fork handle to it. Now cut enough off each piece of the handle to leave the distance between the two about eighteen inches. You have then provided yourself with

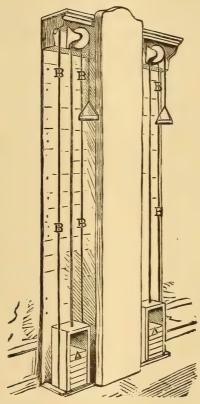
a pair of bars on which you can try one of the exercises usually practiced on the parallel bars, and that one worth almost as much as all the rest.

"On the following page is a sketch of a pair of pulley-weights recently made, designed by Dr. Sargent, which are excellent. Their merits will be seen at a glance. Instead of the weights swaying sideways and banging against the boxes, as they are liable to do in the ordinary old-fashioned pulley-weight boxes, they travel in boxes, A A, between the rods B B. A rubber bed also prevents the weight from making a noise as it strikes the floor, while another capital feature is the arrangement of boxes, in which you may graduate the weight desired by adding little plates of a pound each, instead of the unchanging weight of the old plan.

"One of these boxes, with its load, can easily be used as a rowing weight, by rigging a pulley-wheel a few inches above the floor, and directly in front of the weight box, and then making the rope long enough to also pass under this pulley. A stick of the thickness of an oar handle can then be attached to the end of the rope. If the old-fashioned pulley-weights are preferred, as they are cheaper, long boxes take the place of these iron rods, and a common iron weight travels up and down in the boxes. At some of the gymnasiums—that of the Young Men's Christian Association in New York, for example—these weights, of various sizes, snaffles, ropes, and handles, can all be had, of approved pattern and at reasonable rates.

"Here, then, we have a horizontal bar fitted for most of the uses of that valuable appliance, a pair of parallel bars, or their equivalent for certain purposes, a pair of pulley-weights, and a rowing-weight. Now, with the addition of a pair of dumbbells, weighing at first about one twenty-fifth of the user's own weight, we have a gymnasium more comprehensive than most persons would imagine. Mr. Bryant was contented for forty years with less apparatus even than this, and yet look at the

benefit he derived from it! The bar, cleats, and parallels ought to be made and put up for not over two dollars, and four



or five dollars more will cover the cost of pulley-weights and gear on the old plan, unless a heavy rowing-weight is added, which can be had at five cents a pound, which is also the price of well-shaped dumb-bells.

"Here is a gymnasium, then, under cover, rent free, exactly at hand, when one is lightly clad on rising or just before retiring, which takes up but little room, can hardly get out of order, which will last a dozen years. With these few bits of appara-

tus every muscle of the trunk, nearly all those of the legs, and all those of the arms, can, by a few exercises so simple that they can be learned at a single trying, be brought into active play. The bar in the upper place will be useful mainly for grasping, hanging, or swinging on by the hands, or for pulling one's self up until the chin touches it. In the lower place it enables one to perform very many of the exercises usual on the horizontal bar. The short bars or handles have scarcely more than one office, but that is one of the most important of all exercises for the weak-armed and weak-chested. This exercise is the one called 'dipping.' The bars are grasped with the hands, the feet being held up off the floor; then starting with the elbows straight, gradually lowering until the elbows are bent as far as possible, then rising till they are straight again, and so continuing.

"The pulley-weights admit of a great variety of uses, reaching directly every muscle of the hand, wrist, arm, shoulder, chest, abdomen, the entire back and neck; while, by placing one foot in the handle and pulling the weight with it, several of the leg muscles soon have plenty to do, as is also the case with the rowing-weight. The field of the dumb-bells is hardly less extensive.

"If but one of these pieces of apparatus can be had, the pulley-weights are the most comprehensive, and so the most important, though it is astonishing how closely the dumb-bells follow; and then they have the great advantage of being portable. Combine with the exercises you can get from all this apparatus those which need none at all, such as rising on the toes, hopping, stooping low, walking, running, leaping, and no more tools are needed to develop whatever muscles one likes. What special work will employ any particular muscle will be indicated later.

"If the apparatus is only to be used by a man or boy, a striking-bag can be made of seven or eight pieces of soft calf-

skin, so that the whole, when full of sawdust, shall be either round like a ball or pear-shaped, and shall be about fifteen inches in horizontal diameter. This should be hung on a rope from a hook screwed into one of the beams of the ceiling. This makes a valuable acquisition to the snug little home-gymnasium.

"The fact of having a few bits of apparatus close at hand, when one is lightly clad, will tend to tempt any one to get at them a little while morning and evening. As has been shown, the cost of all these appliances will not be nearly as much as a moderate doctor's bill, and quite as little as the patent gymnastic articles, which are so often praised, mostly by people who know little or nothing of other forms of exercise than those fitted to their own apparatus. A large beam, for instance, has been devised, with handles fastened by a contrivance about it, which is meant to restore the spine (when out of place) to its proper position. But there is scarcely anything it can accomplish which cannot readily be done on some one of these simple, old-fashioned, and far less cumbrous pieces of apparatus.

"Again, in the large cities there are establishments where the chief and almost the sole exercise is with the lifting-machine. A person, standing nearly erect, is made to lift heavy weights often of several hundred, and even a thousand or more pounds. The writer, when a lad of seventeen, worked a few minutes nearly every day for six months on a machine of this kind; and while it seemed a fine thing to lift six hundred pounds at first, and over a thousand toward the end, there came an unquestioned stiffening of the back, as though the vertebræ were packed so closely together as to prevent their free action. There came also a very noticeable and abnormal development of three sets of muscles; those of the inner side of the forearm, the lower and inner end of the front thigh just above the knee, and those highest up on the back, branching outward from the base of the neck. With considerable other vigorous

exercise taken at the same time, this heavy lifting still produced the most marked effect, so that the development caused by it was soon large, out of all proportion compared with that resulting from the other work.

"Now if it is the fact that they who practice on the 'health lift' ordinarily take little or no other vigorous exercise, why is not this same partial development going to result? And if this is the case, is it not rather a questionable exercise, especially for those to whom it is so highly recommended—the sedentary -and even worse for those who stand at desks all day? We have seen it make one very stiff and ungainly in his movements, and it is natural that it should; for he who does work of the grade suited to a truck-horse is far more likely to acquire the heavy and ponderous ways of that worthy animal than he who spreads his exercise over all, or nearly all his muscles, instead of confining it to a few, and who makes many vigorous and less hazardous efforts, instead of a single mighty one. All the muscles of the arm, for instance, which are used in striking out, putting up a dumb-bell, or any sort of pushing, are wholly idle in this severe pulling-more so, even, than they are in the oarsman when rowing. Hence, unless they get even work, there will be loss of symmetry, one-sided development, and only partial strength.

"All have been known (the apparatus first mentioned) for a generation or more. But the many uses of them are but little known, and their introduction into our homes and schools has hardly yet begun. Yet, so wide is the range of exercise one can have with them, and of exercise of the very sort so many people need; and so simple is the method of working them, so free, too, from danger or anything which induces one to overwork, and so inexpensive are they and easy to make, that they ought to be as common in our homes as are warm carpets and bright firesides. Every member of the family, both old and young, should use them daily, enough to keep the home-gym-

"On rising, let him stand erect, brace his chest firmly out, and, breathing deeply, curl * dumb-bells (each of about onefifteenth of his own weight) fifty times without stopping. This is biceps work enough for the early morning. Then, placing the bells on the floor at his feet, and bending his knees a little, and his arms none at all, rise to an upright position with them fifty times. The loins and back have had their turn now. After another minute's rest, standing erect, let him lift the bells fifty times as far up and out behind him as he can, keeping elbows straight, and taking care, when the bells reach the highest point behind, to hold them still there a moment. Now the under side of his arms, and about the whole of the upper back, have had their work. Next, starting with the bells at the shoulders, push them up high over the head, and lower fifty times continuously. Now the outer part of the upper arms, the corners of the shoulders, and the waist have all had active duty.

"Finally, after another minute's rest, start with the bells high over the head, and lower slowly until the arms are in about the position they would be on a cross, the elbows being always kept unbent. Raise the bells to height again, then lower, and so continue until you have done ten, care being taken to hold the head six or more inches back of the perpendicular, and to steadily face the ceiling directly overhead, while the chest is swelled out to its uttermost. Rest half a minute after doing ten, then do ten more, and so on till you have accomplished fifty. This last exercise is one of the best-known chest-expanders. Now that these five sorts of work are over, few muscles above the waist have not had vigorous and ample work,

^{*}Starting with the dumb-bells down at the sides, raise them slowly and steadily in front until they nearly touch the shoulder—technically, "curl" them—holding the head up, the neck rigidly erect, and the chest expanded to its very utmost. Now lower the bells slowly to the sides again, and repeat, and so continue.

the lungs themselves have had a splendid stretch, and you have not spent over fifteen minutes on the whole operation. If you want to add a little hand and fore-arm work, catch a broomstick or stout cane at or near the middle, and, holding it at arm's-length, twist it rapidly from side to side a hundred times with one hand, and then with the other.

"In the late afternoon a five-mile walk on the road, at a four-mile pace, with the step inclined to be short, the knees bent but little, and the foot pushing harder than usual as it leaves the ground—this will be found to bring the legs and loins no inconsiderable exercise; all, in fact, that they will probably need. If, shortly before bedtime each evening, the youth, after he has been working as above, say for a month, will, in light clothes and any old and easy shoes, run a mile in about seven minutes and a half, and, a little later, under the seven minutes, or, three nights a week, make the distance two miles each night, there will soon be a life and vigor in his legs which used to be unknown; and if six months of this work brings a whole inch more on thigh and calf, it is only what might have been expected.

"For still more rapid and decided advance, an hour at the gymnasium during the latter part of the morning, half of it at the rowing-weights, so thickening and stoutening the back, and the other half at 'dipping' and other half-arm work on the parallel bars—so spreading and enlarging the chest and stoutening the back-arms—these will increase the development rapidly, and will sharpen the appetite at a corresponding rate. But it must be real work, and no dawdling or time lost.

"Few young men in any active employment, however, can spare this morning hour. Still, without it, if they will follow up the before-breakfast work, the walking in the fashion named, and the running, they will soon find time enough for this much, and most satisfactory results in the way of improved health and increased strength as well. Indeed, it will for most young men prove about the right amount to keep them toned up and ready

for their day's work. If they desire great development in any special line, let them select some of the exercises described in the previous chapter, as aimed to effect such development, and practice them as assiduously, if need be, as Rowell did his tread-mill work for his legs.

"DAILY EXERCISE FOR BUSINESS MEN.

"And what daily work shall the business man take? His aim is not to lay on muscle, not to become equal to this or that athletic feat, but simply to so exercise as to keep his entire physical and mental machinery in good working order, and himself equal to all demands likely to be made on him.

"First he, like the young man or the woman, should make sure of the ten or fifteen minutes' work before breakfast. Not through the long day again will he be likely to have another good opportunity for physical exercise, at least until evening, and then he will plead that he is too tired. But in the early morning, fresh and rested, and with a few minutes at his disposal, he can, as Bryant did, without serious or violent effort, work himself great benefit, the good effect of which will stay by him all the day. If he has in his room the few bits of apparatus suggested in the chapter on 'Home Gymnasiums,' he will be better off than Bryant was, in that he can have a far wider range of exercise, and that all ready at hand.

Facing it squarely, with head back and chest well out, let him strike it a succession of vigorous blows, with left and right fists alternating, until he has done a hundred in all. If he has hit hard and with spirit, he is puffing freely now, his lungs are fully expanded, his legs have had a deal of springing about to do, and his arms and chest have been busiest of all. This bagwork is really superb exercise, and if once or twice, later in the day, say at one's place of business, or at home again in the evening, he would take some more of it, he would find fret, discomfort, and indigestion flying to the winds, and in their

place buoyancy and exhilaration of spirits to which too many men have long been strangers.

"Now use the dumb-bells two or three minutes. Let them weigh not over one-twenty-fifth of your own weight. First, with head and neck a trifle back of vertical, and the chest held out as full as possible, curl the bells, or lift them from down at arm's-length until you have drawn them close up to the shoulders, the finger-nails being turned upward. Lower again and repeat until you have done twenty-five, the chest being always out. The biceps muscles, or those of the front upper arm, and of the front of the shoulders and chest, have been busy now.

"Next, starting with the bells at your shoulders, push both at once steadily up over your head as high as you can reach, and continue till twenty-five are accomplished. The back-arms, corners of the shoulders, and the waist have now had their turn.

"Facing the pulley-weights, and standing about two feet from them, catch a handle in each hand. Keeping the elbows stiff, draw first one hand and then the other in a horizontal line until your hand is about eighteen inches behind you, the body and legs being at all times held rigidly erect, and the chest well out. Continue this until you have done fifty strokes with each hand. This is excellent for the back of the shoulders—indeed for nearly the entire back above the waist.

"Again, with back to the pulley-weights, hold the handles high over the head, and leaning forward about a foot, keeping the elbows unbent, bear the handles directly downward in front of you, and so do twenty-five.

"Besides these few things, or most of them, put the bar in the upper place, and, catching it with both hands, just swing back and forth, at first for half a minute, afterward longer, always holding the head well back. This is capital at stretching the ribs apart and expanding the chest. If the above exercises seem too hard at first, begin with half as much, or even less, and work gradually up until the number named can be easily done.

"If, once in mid-morning, and again in mid-afternoon, the man, right in his store or office, will turn for two or three minutes to his dumb-bells, and repeat what he did with his home pair in the morning, he will find the rest and change most refreshing. But in any case, whether he does so or not, every man in this country whose life is in-door ought to so divide his time that, come what may, he will make sure of his hour outof-doors in the late afternoon, when the day's work is nearly or quite done. If he must get up earlier, or get to his work earlier, or work faster while he does work, no matter. The prize is well worth any such sacrifice, and even five times it. Emerson well says, 'The first wealth is health,' and no pains should be spared to secure it. Lose it awhile and see. Exercise vigorously that hour afoot, or horseback, or on the water, making sure that during it you utterly ignore your business and usual thoughts. Walk less at first, but soon do your four miles in the hour, and then stick to that, of course having shoes in which it is easy to walk, and before long the good appetite of boyhood will return, food taste as it often has not done for years, sound sleep will be surer, and new life and zest will be infused into all that you do. Let every man in this country who lives by brain-work get this daily 'constitutional' at all hazards, and it will do more to secure to him future years of health and usefulness than almost anything else he can do.

"It will be observed that there is nothing severe or violent in any of these exercises suggested for men—nothing that old or young may not take with like advantage. The whole idea is to point out a plain and simple plan of exercise, which, followed up faithfully, will make sound health almost certain, and which is easily within the reach of all."

A word about walking. Many men of business say and think that they get sufficient exercise in the walking incident

to their working hours, and in getting to and from their places of business. Very few really walk at all. The way they shuffle along the streets, with head down, shoulders dangling, chest collapsed, with long, wooden step-all tumbled in a heap-is not worthy the honorable name of walking, and does not do them a particle of good. Said a broken-down business man, whose sleepless nights were spent in studying the figures on the ceiling, to his doctor, who was urging upon him intelligent physical culture, "Why, I get exercise enough. I always walk to and from the office, and go home to dinner. I get all the exercise I The fact was, the manner in which he got over that four miles a day made it a performance from which he reaped no resultant benefit. While twenty minutes in the evening in a vacant lot opposite his house, with a ball and bat and an active companion, was sufficient to put him to sleep at nine o'clock, to slumber dreamlessly and uninterruptedly until half past six the next morning.

Walking worthy the name is a fine exercise. But to be worthy it must be with erect trunk, chin up, shoulders squared, drinking the free air into the expanded chest as one would drink cool water in summer, and step short and sharp, the foot leaving the ground with an emphatic push. Such walking is a fine physical exercise, and carries with it the advantages incident to all outdoor exercises—i. e., open air, and sunlight. Reference has already been made to the value of the first. Professor H. C. Wood remarks on this point:

"The popular appreciation of the value of fresh air is very far from being as thorough as it might be. During the rebellion, it was no uncommon sight to see sick men, who had been languishing in the ward of a hospital, suddenly improve when placed in exposed tents. The windows of the wards had been habitually kept open, but this was by no means as efficient as the perpetual air-bath of a porous tent. The more pure air the better, and by night as well as by day. There is this much of

truth in the popular prejudice against night air—in malarious districts the air after dusk does contain more of the peculiar poison than does the atmosphere in the sunlight. But in high, healthful districts, night air is very good air.'*

As to the second, the worth of simple sunlight is apt to be forgotten except as some white, cellar-grown sprout reminds us of it. "Sunlight is too cheap to become a fashionable remedy, but its hygienic influence can hardly be overrated. Even in the glorious climate of the Latian hills, the Roman Epicureans constructed special solaria—glass-covered turrets—where they could bask in the full rays of the winter sun, the balm of old age, as Columella calls it; and, on the summerless Isle of Rugen, Nature has taught the poor fishermen to carry their bairns to the downs of Stubbenkammer, whenever the Baltic fogs alternate with a few sunny days."

No home gymnasium is complete without Indian Clubs. The Club Exercise is one of the very best means of indoor culture of the body. The average man is better developed below the waist than above, and therefore the Club is specially fitted to bring him into proper proportions. "Although but two-thirds of the body, viz., from the loins upward, are called into operation in this exercise, its importance must be estimated by the fact that they are precisely those requiring constant artificial practice, being naturally most exempt from exertion. As an adjunct to *Training*, there is nothing in the whole round of gymnastic performances that will be found of more essential service than this exercise with the Indian Clubs. It demands but little muscular exertion, and such as it does require calls chiefly upon that portion of the system which it finds in a state of comparative repose.";

They do not lack the endorsement of professional pugilists. John C. Heenan writes of them: "Although scarcely a week

^{*}Brain-work and Overwork. †Dr. Oswald in Physical Education. ;Walker's Manly Exercises.

has elapsed since I have commenced using them, their beneficial results are the subject of much commendation from my trainer, Jack McDonald, and my friends and backers. As an assistant for training purposes, and imparting strength to the muscles of the arms, wrists, and hands, together, in fact, with the whole muscular system, I do not know of their equal, and I find by experience that the popularity in which your Clubs are held by Professors of Gymnastics in various parts of my native country, is fully deserved, and at no distant day they will become one of the institutions of America."

The Indian Club Exercise comes to us from the East; it does not owe its name to any remote connection with the aborigines of this country. "As the name implies, the Indian Club is an institution of India. In sketches of Indian life, by missionaries and travelers, we have accounts of the various national sports and pastimes of the natives, in which mention is made of the swinging of heavy war clubs, of wood, in various graceful and fantastic motions; that the performers of this exercise exhibited great muscular development and Herculean strength.

"Officers connected with the British Army in India also give accounts of these Indian recreations. The exercises are thus described by one of them: 'The wonderful Club exercise is one of the most effectual kinds of athletic training, known anywhere in common use throughout India. The Clubs are of wood, varying in weight according to the strength of the person using them, and in length about two feet and a half, and some six or seven inches in diameter at the base, which is level, so as to admit of their standing firmly when placed on the ground, and thus affording great convenience for using them in the swinging positions.'

"The exercise is in great repute among the native soldiery, police, and others whose caste renders them liable to emergencies where great strength of muscle is desirable. The evolutions which the Clubs are made to perform, in the hands of one

accustomed to their use, are exceedingly graceful, and they vary almost without limit. Beside the great recommendation of simplicity, the Indian Club practice possesses the essential property of expanding the chest and exercising every muscle in

the body concurrently.*

* * * * "It has before been stated, that as a means of physical culture, the Indian Club stands pre-eminent among the varied apparatus of gymnastics now in use. This fact is unquestionable, as those who know how to use them are ready to attest. For simplicity and convenience, they are unsurpassed by any other kind of apparatus, and half the fixtures of an ordinary Gymnasium will not produce such a general development of the muscles from the loins upwards, as a pair of Clubs.

"To those, then, who say they have no time for exercise, we heartily recommend the Indian Clubs, which, in connection with a daily walk of a few miles, will be just exactly what is required to secure physical perfection and muscular strength, without putting yourself to but very little trouble to attain it. A half hour with the clubs, daily, morning and evening, or to suit convenience it need not be so divided, but may all be taken in the morning, or all in the evening, will, in connection with walking, keep the muscular system in perfect condition, and thus insure perfect bodily health. To those who aspire to more than ordinary development and strength, take more than ordinary exercise with the Clubs, and you can attain what you desire, to almost any limit.

* * * * "The proper weight for beginners depends, of course, upon condition and strength, but can be approximately arrived at as follows: As a general rule, the proper weight may be determined by holding a pair horizontally at the side, at arm's length, letting them down to a per.

^{*}Shortly after the establishment of British colonies in India, the Club Exercise was introduced into the British Army as a part of the drill. For the full manual, with diagrams, see Appendix A.

pendicular, and raising them again, several times, grasping them at the extremity of the handles. If this cannot be done after several trials, the Club is too heavy, and a lighter pair must be tried, until you obtain a fit.

"The majority of beginners, and even somewhat advanced Gymnasts—if they have never used the Club—will find that from six to ten pounds is sufficient weight to start with. It is almost a universal mistake in trying to use clubs that are too heavy. It must be understood that it is not sufficient to be able to execute a few simple evolutions with a Club, and then consider yourself a graduate; for the real benefit can only be derived from a protracted exercise of difficult movements and artistic combinations, calculated to bring into play every known muscle—and to discover many unknown ones—from the loins upwards.

"It is therefore recommended that the novice commence with a weight that he can easily manage, and with which he can execute the preliminary exercises. As he progresses, the weight may be increased, in proportion as the strength develops*."

It is necessary that one who is a stranger to the Clubs provide himself with either a teacher, or a good manual on the subject,† that he may get at the exercise intelligently. Without such aid they would be to him meaningless chunks of wood, from which he would get little benefit. No useful purpose is accomplished by swinging them aimlessly and listlessly, as chance may dictate; and when so treated they very soon fall into disuse and merited neglect. They must be made the implements of clearly defined, systematic movements, or they become of no more significance than any other sticks of wood.

Bean bags are by no means to be despised as implements of indoor exercise. They have the advantage, too, of being

^{*}Kehoe on Indian Club Exercise.

[†]See Appendix A.

social in their nature, as any number may join in the exercises, which are equally appropriate for the entire household. Any exercise that can include the whole family circle has the immense advantage of that spirit and hilarity which always accompany any home-doing which can be made genuinely mutual. The bean bags have the rare quality of equal fitness and equal promise of benefit for the old and the young, the masculine body and the feminine body.

"These bags are made of stout bed-ticking, about ten inches square, and two-thirds filled with beans. They should always be kept away from the dust as much as possible.

"If these exercises are to be performed by couples, partners should stand facing each other, about six feet apart. Throw the bag to partner from chest with both hands, from chest with right hand, then with left. From behind the head with both hands, then with right and left. Bag behind the back, throw with both hands, with right, with left. Stand back to back, throw bag over head with both hands, with right, with left. Take two bags, throw them with right and catch them with left. Throw them with left and catch them with right. Throw them with both and catch them with both hands.

"Same exercises can be taken with three or more bags as the skill increases.

"Vary the exercises by taking them in quartettes, standing a greater distance apart. Stand again in two rows down the hall, six feet apart and facing each other. Starting at the head with a bag in each leader's hand, let it be thrown to every other one till all have caught it, when it must be returned in same manner.

"The leader getting bag first on return trip should hold up bag as signal of victory. Stand in same rows, but face up the hall, then pass bag over head to next one in line, and so on to the last, and back the same way. Any number of bags can be used in this manner."

^{*}Hand-book of Light Gymnastics, by Lucy B. Hunt, Instructor in Gymnastics, Smith College.

The above specifications as to weight of bags and exercises for their use are intended for a girls' school, and present a very fair average of work for family use where all its members of both sexes and various ages are to take part in the sport. the office of the writer, a bag twelve inches square in the clear, containing eight pounds of beans, is in daily use—the exercise being merely its rapid and vigorous pitching and throwing between two persons. To catch it when thrown swiftly, and often wide of the mark, now on this side and now on that, and return it with equal spirit, is magnificent exercise; and is of that come-at-able kind which can be taken up for a few moments at just those times during the day when the need for its stimulation may be felt. In these exercises, too, the risk of accident is reduced to a minimum, for the bag, being but two-thirds filled, is so yielding that it is almost impossible for one to be hurt by it, let it come never so swiftly, or hit where it may.

Among out-door exercises bicycling occupies a position in the front rank. In speaking of the bicycle it must be understood that no reference is made to the common "bone-shakers" which the boys are riding about our streets. The elegant rubber-tired steel machine is always had in mind, which skims along the roadway as rapidly and noiselessly as the swallow in the upper air, its rider "leaving but a shadow as he flies." It is a marvel of mechanical ingenuity and cunning, from the hollow steel backbone to the ball bearings. Easily mastered by the most inapt and awkward, its charm is still so great that one does not need to put forth his will power—does not need to compel himself—to insure faithfulness to his exercise. For to mount and spin away is a strong temptation, rather than a needful yet irksome duty to be insisted upon. Thus, aside from the bringing into play of all the muscles and the consequent symmetrical development, it fulfills the requirement of that hearty enjoyment and pleasing excitement without which no exercise is adequate. As an artist would say, the "motive" is good.

Some of the most sagacious business men of my acquaintance would no more think of doing without their "Harvards" or "Columbias" than they would think of doing without sleep. A successful newspaper man has three, and feels that his health is on an assured basis, instead of its being the creature of capricious chance. That it is a matter of equal certainty with his bank account. Though extraordinary circumstances may upset either, under ordinary conditions both are assured. A wholesale merchant tells the writer that he and his brother were among the very first to import bicycles into this country; that they were the first to ride one hundred miles in twelve hours; that on the fine roads about eastern cities it is easy to keep ahead of what is ordinarily called a three-minute horse; and that thirty miles before supper is to be looked upon as not in anyway an extraordinary performance. As he puts it, "The proper use of the bicycle is one of the very finest forms of There is only one thing that beats it-salt-water exercise. vachting!"

Dr. Geo. S. Hull, in urging upon physicians the adoption of the bicycle in the placeof the time-honored buggy and cart, speaks as follows:

"The bicycle will make, on most of country roads, from eight to ten miles an hour readily. (One hundred miles a day is getting to be a common run.) It takes but one-third of one's weight to propel it on a level; up steep hills one's weight can be doubled, if necessary, by pulling upon the bars, thus giving the muscles of the trunk and upper extremities some vigorous exercise; down grade it goes by itself and at any speed desirable.

* * *

"Concerning the therapeutics of the bicycle, it is not making too broad a statement to say that it can be recommended in nearly all cases where horseback-riding is indicated, the exceptions being ladies and very old or crippled men; and for most of these the tricycle is still preferable to the horse, and certainly infinitely safer. In horseback-riding the inexperienced rider gets the most exercise (jolting, which is not always beneficial), while the skillful horseman merely gets the pure air, and very little above the usual amount of that, as his circulation and respiration are not much increased by the easy, quiet motion his skill as a horseman gives him. In fact, after learning to ride horseback, it often becomes tiresome, the exhilarating effect passes off, and the good results consequently diminish. In bicycling, however, the whole body is in motion, and every rider gets a like amount of exercise. The circulation is quickened to any extent; the blood-vessels of the limbs are not compressed to the extent they are in horseback-riding; there is but little or no jarring; the muscles of the trunk and upper extremities (which, as a rule, are so imperfectly developed in physicians) are brought more into play, and the mind kept actively engaged in the sport-for sport it becomes, even when flying along to a 'terrible accident' or to a death-bed scene.

"Does the novelty wear off? Ask the first bicyclist you meet, and be prepared for his emphatic 'No!'

"Every new remedy is sparingly handled by the profession until ample proofs of its virtue are produced, and the bicycle has been no exception. Fortunately, however, for this new preparation of iron under consideration, it has been thoroughly tested, and hosts of testimonials can be produced in its favor,—not manufactured proofs, such as prop up so many of the patent medicines of our country, but volunteered and accompanied with such indisputable evidence that disease has been conquered, as increased chest measurements, accumulated avoirdupois, multiplied strength, improved digestion, refreshing sleep, etc., etc.

"Now, the bicycle being an easy, safe, and rapid roadster, suitable especially for the physician in his active, out-door life and many emergencies, and also advisable for convalescents and persons debilitated by close confinement or excessive mental strain, producing insomnia, loss of appetite, etc., and, more-

over, being a powerful means of building up good constitutions in our youth, why should not the medical profession seize upon this great invention and make it useful and profitable to themselves (it costs but half the price of a good horse); and why not crowd it into their Materia Medica at the head of the 'Ferrum' preparations, and then see how it will bear the test of application?''

Dr. W. T. Parker, of the United States Army, has an equally favorable opinion of this form of exercise:

"It is undoubtedly true that the merits of bicycle-riding are becoming more generally known, and the number of 'wheelmen' increasing steadily each year. The very erroneous idea which prevailed against the bicycle on account of supposed injury to the health, by inducing rupture, rush of blood to the head, etc., has happily disappeared, and instead of being used only by the most robust and active, as heretofore, the bicycle is now a regular prescription, far more beneficent in its health and life giving properties than all the pills and potions ever invented.

"We have here a preparation of 'steel and rubber for ameliorating, enlivening and prolonging human life,' which is almost unequalled. We can prescribe the bicycle for all men and boys who have legs and arms, and who need the tonic of out-of-door exercise, and the mental stimulant of a new enjoyment. It is quite impossible for me to describe the exhilaration of riding on one of these wonderful and beautiful machines. It is a new departure, indeed; and as the wheelman leaves behind the horse-car and the cab, so pass out of sight morbid fancies, jaundiced ideas, irritable feelings, and the mind is awaked, refreshed, delighted, by the health-giving exercise. It is to be regretted that the prescription is for men only; but possibly the day and the opportunity may come for our sisters and wives to enjoy the wheel. I have said that this new remedy must be taken out of doors. To confine the bicycle to a skating-rink is like going on a fox-hunt in a gymnasium. The

bicycle is like a restive horse that seeks a gallop on the broad plains. * *

"For the professional man, hard-worked and needing exercise and fresh air, what can equal the bicycle for a remedy? In our cities we find daily in the gymnasiums tired, worn-out men trying to improve their muscles, and exerting themselves in dimly-lighted dusty rooms, for whom an hour on the bicyclewould be worth more than all their exertions at gymnastics! Here is where the bicycle is most desirable for the very class of patients who need out-of-door exercise. No longer is the bicycle reserved for the strong and the athletic: it is now a new remedy to provide health and strength. Almost every muscle is brought into action, the pulse quickened, the brain stimulated, the eye on the qui vive, the ear ready for the lightest sound. The use of the bicycle is, in fact, the exercise 'par excellence,' and he who has never enjoyed its pleasures has much awaiting him. For constipation, sleeplessness, dyspepsia, and many other ills. which flesh is heir to, not to speak of melancholy, -all are cura ble, or certainly to be improved, by the new remedy, 'Bicycle.' This remedy must be taken in proper doses, not too little,—an underdose is more to be feared than an overdose in this treatment. Few have leisure enough to run any risk of taking an overdose. How many, though, only wish that they might have a chance to try an overdose! It is always an excellent prescription for the convalescent, and nearly always for chronic invalids."

In the minds of many, a serious objection to this method of physical culture is found in its unsocial nature. True, men and boys may and do ride socially together. But the sister and the wife are supposed to be excluded. Married men (who have never tried it, and who do not know that a thoroughly well man is worth more to his family in one hour than a half sick one in the whole twenty-four), have met me with this, as they considered, fatal objection, when urged to avail themselves of the benefits to be found in the health-giving "wheel." But

the bicycle has a very near relative not open to this accusation. Add to it one wheel, and call it a tricycle, and presto, the family may ride! The bicycle came to us from England, and the tricycle, though we as yet may hardly say it has come, is certainly coming. Dr. Parker has seen it in its home, and having seen its home-virtues, feels the "desire to say a word for the tricycle. To be sure it is not so enjoyable or satisfactory in general as the bicycle, but it has many good points, and is in comparison to its fleet and graceful rival as the carriage-horse to the racer.

"The traveler in England is much struck with the number of tricycles one sees everywhere. The errand boy, house-builder, and, indeed, almost every trade and profession, use the tricycle in their daily avocations. It is easily managed and perfectly safe, and so is the bicycle for that matter; but the tricycle seems safer. You will notice gentlemen leap off their tricycles and go into shops and offices in the most matter-of-fact way, leaving the machine in perfect safety in the street. Perhaps some, more cautious than the rest, will attach the chain and padlock to the wheel; but usually they dismount, leaving their carriage without fear of losing it in their absence.

"On the esplanade, which is a delightful feature of English watering-places, one meets many ladies and gentlemen riding about on tricycles and bicycles, some alone and some in 'sociables.' Here is a young lady working the pedals of a 'sociable,' while by her side sits her aged mother, reading, while they ride along together quietly, yet swiftly. A very pretty picture, indeed, and not at all uncommon. I well remember one evening last summer, while walking in the suburbs of Portsmouth, England, seeing a young gentleman on a 'sociable' tricycle ride up quietly and quickly to a house gate, and spring off lightly from his tricycle. He went into the house and soon returned with a young lady, whom he assisted into the tricycle; then he took the seat beside her, and together they moved off

at a rapid pace, steering gracefully past carriages and pedestrians until they reached the broad esplanade, where they fairly flew over the ground. It was a pretty sight, and one I shall long remember. Many times I have seen fathers with their infant children riding with them on the sociable, or with wife holding the baby while the father provided the motive power for the machine. It is very desirable to have both bicycle and tricycle, just as we have more than one carriage when we can afford it. The bicycle should be purchased first, however.

"With the belief and the hope that we are only in the infancy of this delightful new departure in locomotion, I most cheerfully recommend the new remedy—the bicycle and its associate, the tricycle—and believe that few after a faithful trial will ever 'go away dissatisfied.'"

Turning from the testimony of physicians to that of another profession, we find Lawyer Pratt, of Boston, saying of the bicycle:—"Running as it does but little in absolutely direct lines, but of necessity always in graceful curves, keeping its rider in gentle but ever-varying motion, and free, erect poise, with unlimited capacity of possible feats and fancy ridings, it is always, wherever it makes its appearance, to the beholder a thing of wonderful attraction and æsthetic interest. To the rider it is a grateful and a beneficial exercise and a tireless charm.

"It runs, it leaps, it rears and writhes, and shies and kicks; it is in infinite restless motion, like a bundle of sensative nerves; it is beneath its rider like a thing of life, without the uncertainty and resistance of an uncontrolled will.

"As a means of exercise, it calls every muscle and nerve and faculty into alert and healthful activity, without fatigue, in the open air, the sunshine, and the natural beauties of a rapidly-changing landscape.

"As compared with horseback-riding, it is safer, gentler, readier, and less monotonous; while its less expense and care places it within the reach of many who could not afford the

other. Than gymnastic exercises it is more natural, evenly distributed, and stimulating, and is out of doors. There is no danger except from carelessness; and, however carelessly pursued, it is not as dangerous as any other means of locomotion, as base-ball playing, swimming, skating, shooting, or any of the manly sports pursued with equal want of care. There were some objections to the velocipede on account of liability to rupture and other injuries; but to this no such objections lie. Physicians whose attention has been called to it unanimously pronounce in its favor, and it finds a large number of votaries among them. The testimony of many a professional man of sedentary habits and impaired health, to which I may add my own, is that of gratitude for its benefit and rejuvenation.

"As a means of practical travel it is economical, rapid, and capable of long continuance without exhaustion. It is an always-bridled horse; it costs nearly as much in the first place, perhaps, as either a horse or a carriage, but it saves one of them; its feed is a pint of oil a year, and its grooming is a handful of cotton-waste and ten minutes' attention now and then. It never runs away, requires no harness, and breaks no carriages. It has but two disadvantages, or perhaps three: the first is, that it is a selfish affair,—you cannot take on a friend, though it promotes good-fellowship and generosity otherwise; the second is that it is not adapted to inclement weather, deep mud, or snow; and the third, that it does require at first a little special learning of the art. It takes a man along three times as fast as he can walk, and with much less expenditure of power, as will be seen in proof in another chapter. One rides eight or nine miles an hour on it, over ordinary roads, for several hours in succession, and dismounts as fresh as when he began; and there are no special discomforts, such as follow walking or horseback-riding for the same length of time. One hundred miles in a day is a fair day's ride on the road for an average rider; fifty miles a day is a pastime; a run of ten or twenty

miles of an evening, or to a morning breakfast call on a friend, is a pleasant and wholesome diversion. It is driven with ease, after a little practice, up any hill where a horse in light buggy can trot, and over any road that is decent for travel. A sandy road, or deep mud, or very stony way, is difficult; so is a cobble-stone pavement; but the bicycle in a practical road machine for all ordinary highways, up hill and down hill as they occur, and is far more enjoyable out of doors than on a floor.

"As a sport, bicycling is manly, innocent, humane, and rational. The companionable 'run,' the club 'meet,' the amateur 'race,' are all full of refreshing enjoyment and healthful excitement. The friendly emulation and the voluntary struggle compel regular and temperate habits, and know no whip or spur; while the professional contests, like those of cricket and yachting, are as yet without any of those ungentlemanly associations, and even excesses and cruelties, which are so often objectionably attendant upon boxing, billiards, trotting, pedestrian races, and other public exhibitions of physical training or endurance.

"The training of eye and ear, the alertness and suppleness of limb and joint and muscle, the quick observation, the prompt decision in emergency, the strength and courage and self-reliance, necessarily developed in this sport, are such as to cause it to lead in these respects every other one, and to combine the good results of many. It is pre-eminently a gentlemanly recreation, a refined sport. It is pursued by noblemen and right honorables abroad, and by nature's nobility in our own untitled land. Senior wranglers at the universities, and first-prize Hebrew scholars, are not slow to win championship cups and medals; and, though the royal Guelphs may not be distinguished riders, yet the Prince and Princess of Wales graciously accepted the honor of being escorted into Coventry by bicyclers in November, 1874. Indeed, the ability to ride the bicycle easily and gracefully on occasion is already an accomplishment which

no gentleman can afford to be without, even if he be not an habitual devotee."

The bicycle is a comparatively new thing in this country, but is older in England, where it has stood well the test of time. "Forty thousand bicycles are owned in London and its environs, and three times that number elsewhere in England, of which some 2,200 were massed together in simultaneous motion at the last annual parade at Hampton Court. Upward of 5,000 are certainly known to be owned in the United States, while the true number is presumably nearer 10,000, judging from the fact that more than 800 were present at the Boston parade."

Patient reader, do you begin to wonder if the bicycle be not monopolizing an undue share of these pages? Mount and learn to ride it, and you will say that it has not had a tithe of the room it deserves. It cannot longer be questioned that in its proper use is found the finest form of exercise at present known to man. In seeking a reason for the gratifying results it accomplishes in the way of body-building, it must not be forgotten that though the propulsive power is applied to the pedal, the saddle takes the weight of the trunk off from the feet and legs, while the whole science and art of riding lies in the handles. Thus the muscular activity and responsibility is finely and evenly distributed throughout the entire frame-arms, shoulders, trunk and legs all doing their fair share of the work. To all this must be added the plunge into the free air of heaven, and the exposure to the sunlight of all outdoors which is involved in the use of the bicycle; -and it is hard to imagine a more nearly perfect form of exercise. Still, there are two possibilities of unsatisfactory results which must be guarded against. The first is over-exercise. The wheel is so fascinating that one must not trust to inclination for the signal that enough has been attempted for one day, but rather put that duty upon his sound sense as opposed to inclination. Overwork in exercise is not to be tolerated anymore than over-work in anything else. The second is an inadequate chest. Even on this fairy steed it is easy to let the trunk double together and the shoulders lop forward. Sit erect, the shoulders squared and the chest well out; then spin away as you please, you cannot miss the road to health.

When questions of health are under discussion, no man commands closer attention than Dr. B. W. Richardson of London. In the current number of *Longman's Magazine* he writes as follows of the bicycle as a means of health.

"To the human family the art of cycling is the bestowal of a new faculty. I am not an accomplished cyclist, yet I find that by means of the simple machine, the tricycle, facility of progression by my own muscular powers is fairly doubled, while half the weariness incident to progression on foot is saved. If I walk ten miles in three hours—a fair pace—I am tired: my ankles feel weak, my feet sore, my muscles weary; so that after the effort I am unfitted for any mental work until recruited by a long rest. If I go the same distance on the tricycle on the same kind of road, I find that an hour and a half is the fullest time required for the distance, and when the distance is finished, instead of feeling a sense of fatigue, instead of being ankle-wearied and foot-sore, I am agreeably refreshed by the exercise, and ready for study or other mental occupation.

"In the earlier periods of my professional career, riding on horseback was a necessary part of the daily life. I had learned before then to ride without a saddle and to become habituated to all paces, and until very lately I have kept up horse exercise from the love of it, so that still, with a little renewed trining, I can take a ride on horseback of five-and-twenty miles without excessive fatigue. But I would much rather be forced to ride forty miles on a tricycle, if the riding were a matter of choice, and the question of fatigue the point that determined the choice. This personal knowledge is tendered because it is the most practical, in support of the state-

ment that the art of cycling confers on those who learn it a new faculty of locomotion. It is intended to be a modest proof of the statement; for, if I were to follow it up by the record of what accomplished cyclists have achieved, it might be proved that two or more faculties had been added, and that when a man can wheel himself at the rate of twenty-miles an hour, and a woman can wheel herself a hundred miles a day, there is found a new machinery in the human body itself-a new set of muscles almost, a new skeleton leverage, a new kind of volition. Nor will advance stop. We are entering on a new era in locomotion. To those of us who have studied the question of muscular motion physiologically, it is quite clear that concentration of power in great engines is not the ultimate, as it is not the natural, design for progression, because it is not primary. It seems a wonderful thing and an easy thing for hundreds of persons to be moved by one steam-engine. It seems like starting and moving from a beginning if we shut our eyes to everything until we see the engine and train before us. But let us go back. Let us think of the enormous amount of muscular power that has been employed to extract the materials out of which that engine is made and to construct the engine; to dig out from the earth the coal that feeds the furnace; and all by living power. Then the questions spring up how much human labor is actually saved, how much of the severest labor is added to mankind by the engine? And soon another question springs up-namely, how long will men consent to be engines for engines? It is hardly in human nature to suppose that men will long continue to hold such a position. Will they hold to it in these islands for another fifty years? I very much misunderstand my coming countrymen if they will. Sir Humphrey Davy, in the later part of his life, said that long before coal was used up men would know how to burn water. That is probably true; but what about coal-working?

Long before coal ceases the coal worker will cease, and perchance before men can burn water.

"We want, therefore, to return quickly to first principles. Everyone his own locomotor against time.

"By the simple machines, bicycles and tricycles, we are returning to first principles. We are endowing every person who can use these machines with a new and independent gift of progression, and to what extent this art will proceed in a quarter of a century if it makes the same progress that it has made in the past twentieth part of a century, he were indeed a bold man who should venture to predict. I have already said, what I now take occasion to repeat, that the art of flight will be the practical out-come of the grand experiment which is now going on; for, when a machine can be reduced in weight to twenty-six pounds, and when such a machine can be propelled on a good track twenty miles within the hour, by human limbs, carrying the man who propels it, there are not many removes to the capacity of driving wings or air-screws at a sufficient rate to afford support to the machine on the air. I think that many persons will, indeed, live to see a partial development, at least, of this kind. They will, I mean, see constructed a machine which will be partly sustained by the air and partly by surface of water-of sea, or lake, or river-and which will skim over such surface with just sufficient friction for steerage power, and no more. In short, a flying canoe or boat which, elegant as useful, will at one moment like a nautilus run with the wind, and at another skim the water, independently of wind, like a sea-bird.

"As we stand at present, we have, then, to recognize two facts: one an accomplished fact, namely, that men and women can do such remarkable feats in progression, that they are now the swiftest and most enduring of all land animals; and the other a promising fact—namely, that men and women may soon rival animals of the sea and of the air in the same process.

The facts suggest that the time has come when an inquiry is demanded on the questions whether we are now employing what has been done to the best of purposes, and whether the future outlook is in every sense satisfactory. It appears to me, as one of those who take part in the development of a great movement, that the best is not being done, and that a new departure is immediately demanded in order to keep the progress of the art of cycling in a proper position in respect to its advancement and its usefulness.

"If you ask a cyclist why he takes part in the movement, and what his interest in it means, his answer, in nine cases out of ten, is conveyed in the word 'sport.' So cycling is called by its advocates 'the sport;' so the ambition of cyclists is to appear in the sporting columns of the newspapers as winners in the different competitions; so the men, and for that matter the women too, who have made what is called the best 'record' are thought to be the choicest representatives of cycling circles.

"I do not write these lines to complain against what has occurred in this way up to the present time. I am perfectly aware that the restless activity of those who have made cycling a sport has stirred up manufacturers to the exercise of their finest skill and choicest work in the matter of construction, and that the registry of the 'record' has produced not only the registry of the best riders but of the best machines. This is all right in its way, and it may fairly be urged by the friends of the sport that but for it none of the grand mechanical successes would have been brought forth. In like manner the gentlemen of the turf argue that horse-racing keeps up the breed of the horses and the skill of the rider.

"It is fair to go still further in concession to the modern cycling fraternity. It may and ought to be admitted that the racing they have encouraged has had in it no gambling characteristics; that the rewards for winning have been of the simplest kind; that money racing has been generally discouraged, and that men who would make a living by competition, and who come, in consequence, under the name of 'professionals,' are excluded from clubs and from competitions in which the amateur, as distinct from the professional, sentiment prevails.

"These acknowledgments are as frankly as they are necessarily made. I do not for a moment wish to interfere with that competitive sport which, in a natural and healthy form, would keep healthy improvement at all times in its place; but I and many others think that, if the art of cycling is to run altogether into 'sport' and into a matter of comparative excellence in speed and endurance—in other words, into pace and pluck—it will of necessity bring results which will ruin it in regard to its health-giving qualities, its tone, and its usefulness.

"Let me deal with the first of these points—the matter of health—as the chief one, and as governing the rest.

"The greatest benefit hitherto that has sprung from the art of cycling has been the good it has effected on the health of those who have practiced the art. I really know of nothing that has been so good for health. Men and women who, ten or fifteen years ago, were immured from one year's end to another in close towns, and who had little experience of country air and country landscapes, are now seen rushing in thousands yearly from the towns into the country, and enjoying all the natural advantages resultant from so important a change. By this course they have also made their own houses in the towns healthier, because they have left the confined intramural spaces in which they existed to be ventilated and recharged with fresher, if not with fresh, air. They have learned how to ventilate their own bodies, how to imbibe an air free of injurious vapors and particles, while they have developed a freedom and a strength of limb, and a mental pleasure and escape from care, which have been useful alike to mind and body. In addition, they have been gainers of many good and serviceable mental

qualities. The little bit of risk or danger which attends the expedition has called up courage, attention, decision, and presence of mind; while the desire to perform some predetermined task has taught them how to keep up endurance. The true cockney has been quite transformed by the art of cycling, and in a very few years will be unknown even in Cockaigne.

"We must accept this growing change, however, with all its drawbacks, and with no drawback less conspicuous than the fever and strain of competitive struggle. It seems to me that young and old, male and female, weak and strong, are all going wrong on this mania about records. If I could display the letters that are sent me, either making inquiries on the questions, what can and what cannot be undertaken by particular persons under particular circumstances, and what persons are wishing to attempt, or stating what persons have attempted to do or at all risks have done, the reader would not wonder that I am getting a little anxious about the future of what might be one of the most valuable of all the physical exercises ever invented.

"The following are fair specimens of the dangers in view:

"A gentleman seventy-eight years of age has started a tricycle. He finds to his intense surprise that he can ride from Brighton to Lewes without fatigue. That is about eleven miles. In a few days he discovers he can go to Lewes and back in the day without fatigue. A few days later he tries to do the same distance against time. He can do it in four hours. But there is a young fellow he knows—who, by the way, is only sixty years younger—who can do it in a little over two hours; so why should he not come near to that mark also? It is a mere matter of practice and skill. So he does his best, and having no elastic tissue left in him fitted to give his lungs and blood-vessels good elasticity, he finds himself jarring all over like a ramshackle old bone-shaking bicycle, and cannot get over the 'jolting' for a month, and dates a good deal of mischief from the

jolting, as if the machine, and not his ancient human machine, were the thing at fault.

"Here let me, in parenthesis, put in a memo before I forget it. Whenever a middle-aged rider, mounted on a good machine and riding on a good smooth road, feels jolting, it is the rider that is jolting, and he has ridden enough for that time. If he continue to oppose this admonition, he will be shaky and uncertain in movements and resolution for many after hours or days.

"Another gentleman, not quite so old as the last, makes up his mind against distance. It is his firm determination to ride from London to Bath, one hundred miles, in a day. It is, he thinks, merely a matter of starting early in the morning, and taking the journey by easy stages. He does thirty-three miles as a trial right off, and feels 'as fresh as a daisy.' After a little rest he is surprised to find he has a curious sinking at his stomach and can take no food. He says he was stopped in his effort by a bad fit of indigestion, which spoiled his riding for a fortnight, and rather set him against it altogether, because he could not go from London to Bath in a day like other people.

"This suggests another mem. of much practical importance. Whenever a rider feels a sense of stomach-exhaustion from riding, is unable to take food with an appetite after the ride, or digests slowly after the ride, he is told as plain as these words can tell him that his nervous tone at the center of life, the stomach, is exhausted, and that he had better do no more until he has rested completely and restudied the fable of 'The Belly and the Members.'

"A middle-aged gentleman, who is engaged in sedentary occupation, and who is subject to occasional attacks of rheumatic gout, is advised, very properly, to take to the tricycle. He takes to it, and learning to do eight to ten miles per day, is quite astonished at the result. He feels like a new man. His spirits are so light, he works so well, he sleeps so well. He could not have believed that such a change for the better could

have been effected. He waits for a holiday that he may get over a good deal more ground. Previous to the holiday, and indeed preparatory to it, he keeps close to office work, and then getting clear, he starts off for a tour. The first day he gets over his thirty to forty miles, perspiring very freely. The next day he tries to repeat the experiment, and then, strangely enough, as he thinks, he is visited with a smart touch of his old enemy, the rheumatic gout, and is obliged to give up.

"A third mem. of much practical meaning is suggested by the above-named experience. Whenever a man of sedentary habits, who is greatly benefited by the cycling exercise, taken in moderate and regular efforts, finds that he is getting premonitions of rheumatic affection-pains in his wrists and in other joints, feverishness, acidity, and restless desire for rest while cycling—he has an intimation of having done too much. He has produced a degree of waste of his own muscular fibre beyond that which he can freely eliminate, and has made himself rheumatic by his experiment.

"These admonitions in respect to those who are of or beyond middle age, and which are drawn from direct observation of natural occurrences, extend, in another direction, to the younger members of the cycling fraternity.

"Cycling, as an exercise and a sport, has not been in fashion long enough to enable us to see what may be the effects of it on the young who practice it excessively, and under special circumstances of strain and fatigue. What has been made out so far is beyond any expectation in its favor. No other mode of progression at the same rate and for the same distance has ever been accomplished with the like freedom from actual exhaustion. To make a hundred miles a day on ordinary roads on a bicycle is now considered common-place amongst practiced riders, some of whom indeed sneer at two hundred as nothing very particular. One hundred miles in the twenty-four hours

on the tricycle is one day looked upon as remarkable; but in time Mr. Marriot rides one hundred and eighty-three miles, and has since beaten his own record by a ride of two hundred and nineteen. Even ladies have cast in their skill for these sharp and long tricycle rides, and one of them, Miss Allen, has accomplished one hundred and fifty-three miles within twenty-four hours.

"These are results of a single day's work, taking us fairly by a surprise, which is only over-matched by what has been effected in short runs against time.

"In short runs against time on the track, over twenty miles an hour has been made on the bicycle, over sixteen miles on the tricycle. In short runs against time, on a level road, eighteen miles an hour has been made on the bicycle, fifteen on the tricycle. I have recently been a witness of the fact of twenty-five miles being accomplished on the bicycle on a hilly road, at fourteen miles an hour, by a rider who has not yet reached his twenty-first year.

"The above two results admit of being compared with efforts made in endurance through long journeys, over the track or prepared firm level surface, and over common roads extending from one part of the country to the other, and of the most varied kinds of surface. In some of these efforts on tricycles, distances of seventy miles a day have been kept up for thirteen days, and John O'Groats to Land's End has been traversed at this rate. On the bicycle the same journey has been accomplished at the rate of over a hundred miles per day.

"It took the famous anatomist, John Hunter, fourteen days to ride from Edinburgh to London on a fairly good horse. A modern bicyclist, in good training, would do the same journey in four days. It was considered a wonderful feat that Mrs. Siddons should one night play in London and the next night appear, thanks to the post-chaise, on the stage of the theatre at Bath. In these days a trained lady tricyclist might

perform the same feat, in respect to the journeying, by her own unaided muscular efforts.

"It is only fair to give due and proper praise to labors which have made these changes possible. I am quite aware, from having watched the course of improvements throughout, that the success has been attained by the courage, and what I may call the sport industry, of those who have ridden the modern machine. I am quite aware that these enthusiasts have been obliged to carry out their work under extreme disadvantages. I well remember reading a calculation from a man of science, who was thought to be, by no means, a contemptible reasoner, that it was positively impossible for any person to propel himself on the best road at a greater pace and for a longer period than was possible by the simple act of walking. I also remember what a machine it was that the early bicyclist, and still more, the tricyclist, had to begin upon in the early days of the art. I have seen how all these difficulties have been one by one met, and how the riders of machines, by their contests against time, distance, and endurance, have made the mechanical geniuses keep up with them. I thank those who have effected so much in the way of progress as sincerely as any one of their most ardent admirers.

"There is, however, a danger of enthusiasm directed in one direction alone, and this enthusiasm is, I am sure, carrying the young cycling fraternity too fast and too furious in what they call their sport. It is true that in cycling there is an immense saving of vital organs, as compared with the strain which is put on those organs by other exercises, such as walking, running, climbing and rowing. In cycling the whole weight of the trunk of the body is taken off the lower limbs, while the concussion produced by the descent of the foot on the ground is saved—a great saving. In cycling there is no strain on the muscles of respiration in any ordinary effort. In cycling, therefore, the lower limbs do the greater part of the work, and that

without strain of tendon or friction on the sole of the foot or weariness felt at the ankle and knee.

"Were there not these savings, there could be no accomplishment of a tithe of what is commonly performed even by common-place riders. At the same time it is not all safe. ting altogether aside the dangers which are apt to occur from falls and other physical accidents, there is, in extreme competitive strife, a strain which is, I am quite sure, most injurious to the organism, and which will, I confidently predict, tell seriously on the lives of several cyclists who are now carrying their exertions to an extreme in respect to strength, pace, and length of effort. In one man I can see the clear evidence of premature age induced solely by over-taxation and persistent training. In another I observe the excessive muscular growth in the muscles of the leg, like that which has been observed in the operadancer—a sign which, local though it may be, is a bad sign, indicating an unequal development of the body, and what we doctors term hypertrophy of muscle, which will, in the end, lead to loss of balance of power in the affected parts. In a third I notice a pallor and vibration which indicates a disturbance that ought not to exist between the vascular and nervous systems. In a fourth I detect a restlessness and feverish anxiety which bodes no future good. And in many I am beginning to recognize a too nervous interest in everything that pertains to the sport to mean success to the maker of it or to the sport itself.

"Most fortunately it has been discovered by the competitors themselves that a perfectly temperate habit, in which the use of alcoholic poisons is excluded, is necessary for the best competition; and in this discovery their lies a vein of safety which is largely assuring. Hard drinking cyclists would go to the hospital, the asylum, and the grave as fast as their machines could be made to carry them."

Although it is very generally conceded, by those who have given the matter any attention, that the bicycle outranks every

other means of outdoor exercise, yet as eminent a man as Surgeon Frank H. Hamilton, of New York, has recently put himself on record as a strong advocate of the saddle, giving it the preference over all other agents. He says:

- "Horse-back riding, out of doors, combines more qualities of healthful exercise than any other. It secures air, light, exercise and pleasure.
- "A horse—one horse a day—taken regularly, is both a preventive and a cure for nearly all human maladies. To some, advice must be given to ride slowly; but to others we may say in the language of the old polypharmaceutists: 'When taken to be well shaken.'
 - "No man can ride a spirited horse and calculate logarithms.
- "Advice to poor congregations:—Build a stable; purchase a horse and saddle; endow the whole sufficiently, and when the horse is duly installed, install the pastor. This will save the necessity of a trip to Europe once in three years." The horse should by all means be a fiery one; one whose control shall absorb the rider's energies.

Professor Blackie, of the Edinburg University, has suggestions for those of all ages. He says: "For keeping the machine of the body in a fine poise of flexibility and firmness, nothing deserves a higher place than Games and Gymnastics. A regular constitutional walk, as it is called, before dinner, as practiced by many persons, has no doubt something formal about it, which not everybody knows to season with pleasantness: to those who feel the pressure of such formality, athletic games supply the necessary exercise along with a healthy social stimulus. For boys and young men, cricket; for persons of a quiet temperament, and staid old bachelors, bowls; for all persons and all ages, the breezy Scottish game of golf is to be commended. Boating, of course, when not overdone, as it sometimes is in Oxford and Cambridge, is a manly and characteristically British exercise; and the delicate management of

sail and rudder as practiced in the Shetland and Hebridean seas, is an art which calls into play all the powers that belong to a prompt and vigorous manhood. Angling, again, is favorable to musing and poetic imaginings, as the examples of Walton and Stoddart, and glorious John Wilson, largely show."

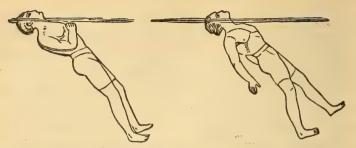
Lawn Tennis, and ball and bat must not be forgotten. But if the latter mean for you the playing of base-ball, you must not grumble if you find yourself compelled to carry a crippled finger. Foot-ball would be a fine exercise if it were capable of being pursued with any sort of moderation. But to suggest temperate indulgence in foot-ball, is like advising a man to take his ice cream hot.

There are certain exercises dependent upon special circumstance which are heartily to be commended whenever their enjoyment is within our reach. Skating is a splendid sport, and an admirable means of exercise. Swimming in its proper season is altogether praiseworthy. Lord Byron was one of the best swimmers of modern times, and performed Leander's celebrated feat of swimming from Abydos to Sestos. Beside, it is an accomplishment which no one who values his life can afford to be without. It is not so difficult an art as many imagine. When you think you can do it, you can do it. That shrewd old philosopher, Benjamin Franklin, saw clearly the real difficulty in the case when he advised the learner to "choose a place where clear water deepens gradually, to walk into it till it is up to his breast, to turn his face to the shore, and to throw an egg into the water between him and it—so deep that he cannot fetch it up but by diving. To encourage him to take it up, he must reflect that his progress will be from deep to shallow water, and that at any time he may, by bringing his legs under him, and standing on the bottom, raise his head far above the water. He must then plunge under it, having his eyes open, before as well as after going under; throw himself towards the egg, and endeavor, by the action of his hands and feet against the

water, to get forward till within reach of it. In this attempt, he will find that the water brings him up against his inclination, that it is not so easy to sink as he imagined, and that he cannot, but by force, get down to the egg. Thus he feels the power of water to support him, and learns to confide in that power; while his endeavors to overcome it, and reach the egg, teach him the manner of acting on the water with his feet and hands, as he afterwards must in swimming, in order to support his head higher above the water, or to go forward through it." It is somewhat surprising that the upright method of swimming, which gets its name from Bernardi, has not more rapidly come into vogue. Combining as it does greater ease, safety, and economy of strength, making possible the swimming of considerable distances, it were natural to suppose that it would gain a rapid popu-"If, then, any person, however unacquainted with swimming, will hold himself perfectly still and upright, as if standing with his head somewhat thrown back so as to rest on the surface, his face will remain above the water, and he will enjoy full freedom of breathing. To do this most effectually, the head must be so far thrown back that the chin is higher than the forehead, the breast inflated, the back quite hollow, and the hands and arms kept under water. If these directions be carefully observed, the face will float above the water, and the body will settle in a diagonal direction.

"In this case, the only difficulty is to preserve the balance of the body. This is secured as described by Bernardi, by extending the arms laterally under the surface of the water, with the legs separated, the one to the front and the other behind: thus presenting resistance to any tendency of the body to incline to either side, forward or backward. This posture may be preserved any length of time.

"The principle reasons given by Bernardi for recommending the upright position in swimming are—its conformity to the accustomed movement of the limbs; the freedom it gives to the



hands and arms, by which any impediment may be removed, or any offered aid readily laid hold of; vision all around; a much greater facility of breathing; and lastly, that much less of the hody is exposed to the risk of heing laid hold of by persons struggling in the water.

"The less we alter our method of advancing in the water from what is habitual to us on shore, the more easy do



we find a continued exercise of it. The most important consequence of this is, that, though a person swimming in an upright posture advances more slowly, he is able to continue his course much longer; and certainly nothing can be more beneficial to a swimmer than whatever tends to husband his strength, and to enable him to remain long in the water with safety.

"The head is the great regulator of our movements in water. Its smallest inclination to either side instantly operates on the whole body; and, if not corrected, throws it into a horizontal posture. The pupil must, therefore, restore any disturbance of equilibrium by a cautious movement of the head alone in an opposite direction. This first lesson being familiarized by practice, he is taught the use of the legs and arms for balancing

the body in the water. One leg being stretched forward, the other backward, and the arms laterally, he soon finds himself steadily sustained, and independent of further aid in floating."

Bernardi says: "Having been appointed to instruct the youths of the Royal Naval Academy of Naples in the art of swimming, a trial of the proficiency of the pupils took place, under the inspection of a number of people assembled on the shore for that purpose, on the tenth day of their instruction. A twelve-oared boat attended the progress of the pupils, from motives of precaution. They swam so far out in the bay, that at length the heads of the young men could with difficulty be discerned with the naked eye; and the Major General of Marine, Forteguerri, for whose inspection the exhibition was intended, expressed serious apprehensions for their safety. Upon their return to the shore, the young men, however, assured him that they felt so little exhausted as to be willing immediately to repeat the exertion."

An official report of a commission of the Neapolitan government asserts:—

"1st. It has been established by the experience of more than a hundred persons of different bodily constitutions, that the human body is lighter than water, and consequently will float by nature; but that the art of swimming must be acquired, to render that privilege useful.

"2d. That Bernardi's system is new, in so far as it is founded on the principle of husbanding the strength, and rendering the power of recruiting it easy. The speed, according to the new method, is no doubt diminished; but security is much more important than speed; and the new plan is not exclusive of the old, when occasion requires great effort.

"3d. That the new method is sooner learnt than the old, to the extent of advancing a pupil in one day as far as a month's instruction on the old plan."*

^{*}Walker's Manly Exercises.

Sailing is a royal means of physical culture, and one of the best of vacation employments. A Boston man, who has given much attention to the science of health, as well as to business, jogs my elbow to say that "Salt water yachting knocks everything." When Boston trenches upon slang, the emphasis is "The Voyage Alone in the Yawl Rob Roy' tells great. how a man of education, a hard-worked London barrister, and withal an avowed, active Christian gentleman, who neverfeared to show his moral colors, spends his summer months in sailing for health. The book is more than an entertainment. He who reads it failing to recognize that it is intended to do missionary work among a population which treats the body worse than the prostrate Hindoo throng did before Juggernaut, does not comprehend the author's idea in writing. The fact that the little volume has run through edition after editionthat it has been the means of dotting the English waters with safe, comfortable, cheap little cruisers like the Rob Rov, shows that there was a need for it; and more, that it filled a void in English intellectual life.

- "What are the special advantages of sailing from a sanitary point of view?
 - "First-It is a complete change in mode of life.
- "Second—It therefore brings rest in directions where mind and body were previously chiefly taxed.
- "Third—If properly conducted it enforces simple living, muscular exercise, early rising and in emergencies prompt decision and speedy action, thus bringing increase of physical vigor.
- "Fourth—It is cheaper than an ordinary seaside resort, having beside all of the hygienic advantages with but few of the peculiar disadvantages.
- "Fifth—It gives rest to the eyes which continuous work at near distances has taxed, injured and often almost ruined."*

^{*}J. T. Rothrock in Our Continent.

An illustration of this latter point was recently a matter of personal experience. After prolonged labor at near distances, happening to stand on a river bank, some discussion arose over the detail of a small boat in course of construction on the opposite bank, perhaps a quarter of a mile distant. After half an hour's use at long range landscape objects, accident again directed attention to the boat, and the difference in definition was startling. What before was dim uncertainty was now perfectly plain and distinct.

It will be remarked that many of the forms of exercise suggested, carry with them certain possibilities of personal danger. That they involve more or less risk of life and limb. There is no denying the justness of the observation. If I ride horseback, I may get my neck broken. If I sail, I may be overturned and drowned. If I ride a bicycle, I shall probably get more than one severe bump. But is it not fair to say that with reasonable care none of them are hazardous? Is it not true that everything we do involves bodily risk; and is it not true that the number of those who suffer injury or loss of life in manly recreation is as nothing compared with those who fall the victims of the ignominious assassination of the store and office? But beyond all this is a something which is so greatly to be esteemed, that I would not take the danger out of these health pursuits if I could. There is a certain energy, spirit, fire, manly courage whose seed is planted within every man, and needs just this training to warm it into life, and secure its proper development. Without its noble possession, no man is worthy to be called a man. Who can abide a whimpering boy? Why is it that all the manly boys are not killed outright times without number before they reach their majority, unless it be a kind Providence making provision for the unfolding of this choicest quality? Over-training in all manly virtues is impossible. It is the only way to strangle cowardice, and its masquerade, foolhardiness.

In deciding upon a physical regimen, care must be taken that partiality to a single exercise does not lead to its exclusive practice, and a consequent ill-balanced development. We like to do that which we can do well, and are liable to be unduly swayed by this liking. The danger is greater with gymnasium work than with the various out-of-door forms of exercise, for it is found to lurk in the exercise of certain sets of muscles, rather than in the keen employment of the whole man. It follows motions, not pursuits. The latter imply all conceivable variety of exertion in all possible variety of position; and when we have this, we have all that is desirable. It is natural that the warning should be sounded by a gymnasium man. Maclaren remarks: "I may state that this error of exclusive devotion to one exercise is not confined to rowing, nor committed solely by rowing men; most men have a favorite exercise which they declare is 'the finest in the world,' and which they aver 'exercises every muscle of the body.' Now there is no single exercise invented or inventable by man, which gives employment to more than a part of the body, and to a very small part too, when closely examined; and none, with which I am acquainted, which gives anything approaching to uniform employment even to the parts employed. The error lies not in men's having favorite exercises; every man ought to have his favorite exercise, in which he excels or in which he strives to excel, in which he takes pride and in which he finds pleasure, just as he may have his favorite author or his favorite object of study; yet not for exclusive reading, if he would have his whole mind cultivated or employed; and least of all should such exclusive devotion to one pursuit, mental or physical, be during the period of growth, when ultimate conformation of organ and capacity of function are mainly determined." Or, in the pat words of Dr. Hamilton, "a biceps hardened by the use of dumb-bells or by any other method, cannot be accepted as evidence that every muscle and organ in the body has had proper exercise, and that they are all now in good working order."

But this discussion has already exceeded its proper limit and must come to a close. And its closing can only be a reiteration and re-emphasizing of the original propositions—the necessity for physical culture, and its ability to redeem those who may seem to be and think themselves to be, already physically The great difficulty is to wake men up to its imperative need, its possibilities for good, its profits in dollars and cents. President Eliot, of Harvard, says that "To attain success and length of service in any of the learned professions, including that of teaching, a vigorous body is well-nigh essential. All professional biography teaches that to win lasting distinction in sedentary, in-door occupations, which task the brain and the nervous system, extraordinary toughness of body must accompany extraordinary mental powers." We are not shut up to the accident of heredity in the matter of this "extraordinary toughness of body." We need not be fatalists. If ours be a hard fate, it is because we make it so. Max Muller says of Kant, that "though of a very slender constitution, all his life through he managed to keep himself in health by persistent adherence to certain maxims of diet and regimen." "In the great English Universities of Oxford and Cambridge, it has been proved by centuries of experience, that, as a rule, the most indefatigable scholars make better progress in their studies, if they take two hours out of their fourteen or sixteen working-hours for constitutional exercise in rowing, walking, or cricket, than if they attempt to perform mental work continuously, without allotting a proper period to mere bodily exertion." While these pages are passing through the press it has been my privilege to hear from the lips of Judge Albion W. Tourgee a magnificent plea for the physical in education. Going further than any physician dare, lest he be set down as a funatic, he closed the discussion with the words, "If you can't

give him both, for Heaven's sake give him the legs!" The secret of the "good fortune" which gave William Cullen Bryant his strength and stamina is found in the account which he gives of himself: "I promised to give you some account of my habits of life, so far, at least, as regards diet, exercise, and occupation. I have reached a pretty advanced period of life, without the usual infirmities of old age, and with my strength, activity, and bodily faculties generally in pretty good preservation. How far this may be the effect of my way of life, adopted long ago, and steadily adhered to, is perhaps uncertain.

"I rise early, at this time of the year about $5\frac{1}{2}$; in summer, half an hour, or even an hour, earlier. Immediately, with very little incumbrance of clothing, I begin a series of exercises, for the most part designed to expand the chest, and at the same time call into action all the muscles and articulations of the ody. These are performed with dumb-bells, the very lightest, lovered with flannel; with a pole, a horizontal bar, and a light chair swung around my head. After a full hour, and sometimes more, passed in this manner, I bathe from head to foot. When at my place in the country, I sometimes shorten my exercises in the chamber, and, going out, occupy myself for half an hour or more in some work which requires brisk exercise. After my bath, if breakfast be not ready, I sit down to my studies until I am called.

"After breakfast I occupy myself for a while with my studies, and then, when in town, I walk down to the office of The Evening Post, nearly three miles distant, and after about three hours, return, always walking, whatsoever be the weather or the state of the streets. In the country I am engaged in my literary tasks till a feeling of weariness drives me out into the open air, and I go upon my farm or into the garden and prune the trees, or perform some other work about them which they need, and then go back to my books. I do not often drive out, preferring to walk.

That I may rise early, I, of course, go to bed early: in town, as early as 10; in the country somewhat earlier. For many years I have avoided in the evening every kind of literary occupation which tasks the faculties, such as composition, even to the writing of letters, for the reason that it excites the nervous system and prevents sound sleep. * * * I abominate all drugs and narcotics, and have always carefully avoided everything which spurs nature to exertions which it would not otherwise make. Even with my food I do not take the usual condiments, such as pepper and the like."

"Mr. W. F. A. Delane, who did so much for the organization of the Times newspaper when it was under his manage ment, began by doing law reports for that paper, in London and on circuit. His appearance of rude health surprised other members of his profession, but he accounted for it by the care he took to compensate for the bad air and sedentary labor in the courts of law by traveling between the assize towns on horseback, and also by a more than commonly temperate way of life, since he carefully avoided the bar dinners, eating and drinking for health alone. It is possible to endure the most unhealthy labor when there are frequent intervals of invigorating exercise, accompanied by habits of strict sobriety. plan, so commonly resorted to, of trying to get health in stock for the rest of the year by a fortnight's hurried traveling in the autumn, is not so good as Mr. Delane's way of getting the week's supply of health during the course of the week itself.

"It happened once that George Sand was hurried by the proprietor of a newspaper who wanted one of her novels as a feuilleton. She has always been a careful and deliberate worker, very anxious to give all necssary labor in preparation, and, like all such conscientious laborers she can scarcely endure to be pushed. However, on this occasion she worked overtime, as they say in Lancashire, and to enable herself to bear the extra pressure she did part of the work at night in order to

keep several hours of daylight clear for her walks in the country, where she lived. Many writers, in the same situation, would have temporarily abandoned exercise, but George Sand clung to it all the more at a time when it was especially necessary that she should be well. In the same way Sir Walter Scott counterbalanced the effects of sedentary occupation by his hearty enjoyment of field-sports. It has been supposed that his outdoor exercise, which to weaker persons appears excessive, may have helped to bring on the stroke of paralysis which finally disabled him; but the fact is, that when the stroke arrived Sir Walter had altered his habits of life in obedience to what he believed to be his duty, and had abandoned, or nearly so, the active amusements of his happier years. I believe rather that whilst he took so much exercise his robust constitution not only enabled him to endure it without injury, but required it to keep the nervous system healthy, in spite of his hard work in literary composition. Physical exercise, when the constitution is strong enough to endure it, is by far the best tranquillizer of the nervous system which has yet been discovered, and Sir Walter's life at Abbotsford was, in this respect at least, grounded on the true philosophy of conduct. French romancer, Eugene Sue, wrote till ten o'clock every morning, and passed the rest of the day, when at his countryhouse, either in horse-exercise, or field-sports, or gardening, for all of which he had a liking which amounted to passion. Shelley's delight was boating, which at once exercised his muscles and relieved his mind from the weariness of incessant invention or speculation. It will generally be found, that whenever a. man of much intellectual distinction has maintained his powers in full activity, it has been by avoiding the bad effects of an entirely sedentary life.

"Scott was both a pedestrian and an equestrian traveler, having often, as he tells us, walked thirty miles or ridden a hundred in those rich and beautiful districts which afterwards.

proved to him such a mine of literary wealth. Geothe took a wild delight in all sorts of physical exercise—swimming in the Ilm by moonlight, skating with the merry little Weimar court on the Schwansee, riding about the country on horseback, and becoming at times quite outrageous in the rich exuberance of his energy. Alexander Humboldt was delicate in his youth, but the longing for great enterprises made him dread the hindrances of physical insufficiency, so he accustomed his body to exercise and fatigue, and prepared himself for those wonderful explorations which opened his great career. Here are intellectual lives which were forwarded in their special aims by habits of physical exercise; and, in an earlier age, have we not also the example of the greatest intellect of a great epoch, the astonishing Leonardo da Vinci, who took such a delight in horsemanship that although, as Vasari tells us, poverty visited him often, he never could sell his horses or dismiss his grooms?

"The physical and intellectual lives are not incompatible. It may go farther, and affirm that the physical activity of men eminent in literature has added abundance to their material and energy to their style; that the activity of scientific men has led them to innumerable discoveries; and that even the more sensitive and contemplative study of the fine arts has been carried to a higher perfection by artists who painted action in which they had had their part, or natural beauty which they had traveled far to see. Even philosophy itself owes much to mere physical courage and endurance. How much that is noblest in ancient thinking may be due to the hardy health of Socrates!"

Would the name of Margaret Fuller ever have become a familiar one, had her prodigious energy been thwarted by a tumble-down shanty of a body? When her father died, he left her under the necessity of earning her own livelihood. The story of the winter in Boston is told by Mrs. Julia Ward Howe: "Here is, in brief, the tale of her winter's work. (1836-7.)

^{*}The Intellectual Life. Philip Gilbert Hamerton

To one class she gave elementary instruction in German, and that so efficiently that her pupils were able to read the language with ease at the end of three months. With another class she read in twenty-four weeks Schiller's 'Don Carlos,' 'Artists' and 'Song of the Bell'; Goethe's 'Herrman und Dorothea,' 'Gotz von Berlichingen,' 'Iphigenia,' the first part of 'Faust' and 'Clavigo'; Lessing's 'Nathan der Weise,' 'Minna' and 'Emilla Galotti'; parts of Tieck's 'Phantasus' and nearly all of the first volume of Richter's 'Titan.' With the Italian class she read parts of Tasso, Petrarch, Ariosto, Alfieri and the whole hundred cantos of Dante's 'Divina Commedia.' Besides these classes she had also three private pupils, one of them a boy unable to use his eyes in study. She gave this child oral instructions in Latin, and read to him the history of England and Shakespeare's plays in connection. The lessons given by her in Mr. Alcott's school were, she says, valuable to her, but also very fatiguing. Though already so much overtasked, Margaret found time and strength to devote one evening every week to the viva voce translation of German authors for Dr. Channing's benefit, reading to him mostly from De Wette and Herder."

However, it must be repeatedly insisted upon that these giant workers were not statues of adamant, exempt from the laws of animal life. Having obtained noble bodies, they gave them the care befitting their splendid service. They understood how to feed them with exercise—they were equally careful to renew them with rest. While we exalt the one to its lawful supremacy we must not forget to give the other its proper place. The strongest must have rest. Wordsworth is believed to have had a sound constitution. "His health at seventy-two was excellent." Yet when he was engaged in composing the "White Doe of Rylstone," "he received a wound in his foot, and he observed that the continuation of the literary labor increased the irritation of the wound; whereas by suspending his work

he could diminish it, and absolute mental rest produced a perfect cure." "Many years ago the Hon. William D. Kelley and the father of Representative Randall were conversing with a famous Parisian doctor about health and longevity. The physician, turning abruptly to the then young Mr. Kelley, said: "Monsieur, if you will make it your rule never to get exhausted so long as a part of the day remains in which you have anything to do, you will live to be as old as I am." Judge Kelley followed this truly golden word of counsel, and with gratifying results, to which he often testifies."

That rule applies to those who have, through the ministry of exercise and the lesser agencies of health, gotten a body worth resting. Too many begin the day with exhaustion. Some one has humorously suggested that in the most literal sense the confession of the prayer-book is true-"We have done those things which we ought not to have done; we have left undone those things which we ought to have done, and there is no health in us." To all such the precept of the French doctor has no application. It would stop them before they begin. Unless, indeed, they set about so training their bodies up to the health standard, that they shall push the exhaustion-mark from the beginning of the day clear over to the evening. Thus we are brought back to face again the question of exercise. is the crying need that will not down. It is the passport to rest; it is the great motor of labor—that engine which drives us to success. Doctors ancient and modern speak as with one voice. Du Bois-Reymond asserts that "equally whether we understand it or not, man is adapted to self-improvement by means of exercise. It makes his muscles stronger and more enduring; his skin becomes fortified against all injury; through exercise his limbs become more flexible, his glands more productive. It fits his central nerve-system for the most complicated functions; it sharpens his senses, and by it his mind, reacting upon itself, is enabled to augment its own elasticity and versatility." Dr.

Hamilton testifies that "Exercise, or the use of every organ of the body, is necessary to the healthy and full performance of their functions. When any organ is in complete and prolonged disuse it tends inevitably to decay. A person whose mind has been actively employed all the day, in the counting-room, upon the bench, or in the study, needs in order to restore the balance, bodily exertion conjoined with complete mental relaxation." "Heroditus is said to have been the first who applied the exercises and regimen of the Gymnasium to the removal of disease, or the maintenance of health. Among the Romans, Asclepiades carried this so far that he is said, by Celsus, almost to have banished the use of internal remedies from his practice. He was the inventor of various modes of exercise and gestation, in Rome. In his own person, he afforded an excellent example of the wisdom of his rules, and the propriety of his regimen. Pliny tells us that, in early life, he made a public profession that he would agree to forfeit all pretensions to the name of a physician, should he ever suffer from sickness, or die but of old age; and what is extraordinary, he fulfilled his promise, for he lived upwards of a century, and at last was killed by a fall down stairs." Boerhaave, the greatest physician Holland everknew, was moved to say; -- "When I reflect on the immunity of hard-working people from the effects of wrong and over-feeding I cannot help thinking that most of our fashionable diseases might be cured mechanically instead of chemically, by climbing a bitterwood-tree or chopping it down, if you like, rather than swallowing a decoction of its disgusting leaves." During his life he had in his possession a large volume with golden clasps, which he asserted contained all the secrets of medicine. opening it after his death found only these words written: "Keep the head cool, the feet warm, and the bowels open." Hamilton says that "health must be earned; it can seldom be bought" Bichat's expression is a shade better: not buy health; we must deserve it." Herbert Spencer writes.

that "Perhaps nothing will so much hasten the time when body and mind will both be adequately cared for, as a diffusion of the belief that the preservation of health is a duty. seem conscious that there is such a thing as physical morality. Men's habitual words and acts imply the idea that they are at liberty to treat their bodies as they please. Disorders entailed by disobedience to Nature's dictates, they regard simply as grievances: not as the effects of a conduct more or less flagitous. Though the evil consequences inflicted on their dependents, and on future generations, are often as great as those caused by crime; yet they do not think themselves in any degree criminal. The fact is, that all breaches * of the laws of health are physical sins." Again, "People are beginning to see that the first requisite to success in life, is to be a good animal."

The men of olden time understood this. "The orators, philosophers, poets, warriors, and statesmen of Greece and Rome gained strength of mind as well as muscle by the systematic drill of the palæstra. The brain was filled thereby with a quick-pulsing and finely oxygenated blood, the nerves made healthy and strong, the digestion sharp and powerful, and the whole physical man, as the statues of antiquity show, developed into the fullest health and vigor. It is told of Cicero that he became, at one period of his life, a victim of that train of maladies expressed by the word 'dyspepsia,'-maladies which pursue the indolent and the overworked man as the shark follows in the wake of the plague-ship. The orator hastened, not to the physicians, which might have hastened his death, but to Greece; flung himself into the gymnasium; submitted to its regimen for two entire years; and returned to the struggles of the forum as vigorous as the peasants that tilled his farm. Who doubts that, by this means, his periods were rounded out to a more majestic cadence, and his crushing arguments clinched with a tighter grasp? Had he remained a dyspeptic, he might have written beautiful essays on old age and friendship, but he never would have pulverized Catiline, or blasted Antony with his lightnings. Everything shows that the greatness of our great men is as much a bodily affair as a mental one. Nature presented our Websters, Clays, and Calhouns, not only with extraordinary minds, but—what has quite as much to do with the matter—with wonderful bodies. Above all, our Grants, Shermans, and Sheridans, what would they be without nerves of whipcord and frames of iron? Let Napoleon answer. The tortures of hereditary disease, united with the pangs of fever, wrung from that great captain, in one of the most critical days of his history, the exclamation that the first requisite of good generalship is good health."

"Force begets fortitude and conquers Fortune," are the words of Helvetius. "Some pathologists maintain that there is but one essential proximate cause of disease, viz., the loss of vital resistance and the enlargement of the capillary vessels." "I beseech you to remember," urges Garfield before the Hiram students, "that the genius of success is still the genius of labor." "Any success you may achieve is not worth the having unless you fight for it," he insists before the Washington students. Success everywhere depends upon a good fighting trim. "Thrilling voices breathe from the monuments of the mighty dead and thunder through the dome of fame the truth that Determination, Strength and Perseverance are the three Champions of the World."

"It is said that the Duke of Wellington, when once looking on at the boys engaged in their sports in the playground at Eton, made the remark, 'It was there that the battle of Waterloo was won.'"

"That the splendid empires which England has founded in every quarter of the globe have had their origin largely in the foot-ball contests at Eton, the boat-races on the Thames, and the

^{*}Getting On in the World. Matthews.

cricket-matches on her downs and heaths, who can doubt? The race so widely dominant,—'whose morning drum-beat, following the sun, and keeping company with the hours, circles the earth with one continual, unbroken strain of the martial airs of England,'—is dominant because its institutions cultivate self-reliance, and its breeding develops endurance, courage, and pluck.''

There is a hot weather saying in Europe about "everything being asleep in the shade but dogs and Englishmen." Such a reputation as this must be earned, it is not accidental. It means an honest physical history. It means that while Britons are earning this reputation abroad, at home Professor Blackie is urging that "every young student ought to make a sacred resolution to move about in the open air at least two hours every day," and a reverend gentleman of Oxford is writing an exhaustive paper on sliding seats as applied to rowing, and their influence on oarsmen.

"England expects every man to do his duty." Yet the physical millennium has by no means come, even in England. During the year 1881, according to the Registrar-General's report, 139 persons for every 100,000 of the population of Scotland died of old age, and only 111 for every 100,000 of the population of England.

How pitiful a spectacle does Dean Swift present. "I shall die first a-top," was his mournful exclamation, as he gazed on a noble oak whose upper branches had been struck by lightning; I shall be like that tree, I shall die first a-top.' Afflicted for years with giddiness and pain in the head, he looked forward with prophetic dread to insanity as the probable termination of his existance; and after nine years of mental and bodily suffering, the great satirist, the mighty polemic, the wit and the poet, died as he had feared and half predicted, 'in a rage, like a poisoned rat in a hole.'" How painful the picture of Horace Bushnell, sketched by his daughter. "At the dinner-table he

came to us from his thought-world, from the writing of sermons or books; and then he was no more of the outward, but of the subjective and inward life. Then his every hair stood on end, electric with thought; his eyes had a fixed and absent look, and he forgot the name of a potato. His mind being far away, the present body fed itself hastily, and with little note of food or drink. It was no wonder that he experienced the horrors of dyspepsia. But for the enforced exercise of the afternoon, he would have been earlier the victim of untimely brainwork." Was not that a sad confession of Rufus Choate's, that "latterly he hadn't much of any constitution, but simply lived under the by-laws." He died at fifty-five. "Cuvier's paralysis came upon him whilst he was still in full activity, and death prevented him from arranging a great accumulation of scientific material. said to M. Pasquier, 'I had great things still to do; all was ready in my head. After thirty years of labor and research, there remained but to write, and now the hands fail, and carry with them the head.'" We must not think of permitting an internecine strife between our faculties. We must free ourselves from the tyranny of circumstance, that we be not compelled to make the reply of Dr. J. W. Alexander. To the question whether he enjoyed the full assurance of faith, he replied, "I think I do, except when the wind is from the East." Shall it not be our ambition to have it said of us as Tennyson says of the Duke of Wellington, "He stood four-square to all the winds that blew." "Few men will claim that they are better workers than he was, or that they get through more in a day or year, or that, heavy as their responsibilities may be, they surpass or even equal those which were his for years together. Yet all the terrible mental strain this illustrious man underwent, battling with one of the greatest captains this world ever saw, all the exposure and forced marching, privation and toil, which come to the faithful soldier, and to him who holds the lives of multitudes in his hands, this man knew, and

yet so controlled his work, exacting as it all was, as to manage to keep his body superior to all it was called on to do, and his mind in constant working order, and this not merely up to three score and ten, but to four score good years, and three more besides." Would we not be like the giants. "Peel, Brougham, Lyndhurst, Campbell, Bright, Gladstone, -nearly all the great political and legal leaders, the prodigious workers at the bar and in the senate, -have been full-chested men, who have been as sedulous to train their bodies as to train their intellects." "Charles Dickens, who probably performed as much and as satisfactory work in his lifetime as any man who ever lived, was able to make time for an almost daily ten-mile walk, to which he invariably resorted when he felt out of sorts and in poor spirits." "Sydney Smith tells public speakers that if they would walk twelve miles before speaking, they would never break down." "Latimer and Luther were stalwart men, who could have knocked down an opponent first, and put him down in argument afterwards." "Had the sturdy, prizefighter make of Martin Luther nothing to do with his contempt for the danger awaiting his appearance before Charles V. and his Diet of Worms, and which caused him to say he would go there though the devils were as thick as the tiles on the houses; and with the grand stand he made for the religious light which now shines so freely upon the whole Christian world?" "Martin Luther," says Talmadge, "was so mighty for God, first, because he had a noble soul, and secondly, because he had a muscular development which would have enabled him to thrash any five of his persecutors, if it had been Christian so to do." "On his campaign against a horde of northern barbarians, one of Trajan's generals attempted to scare, or at least to astonish, the natives by shipping a troop of lions across the Danube. But the children of nature declined to marvel: 'They mistook them for dogs,' says the historian, 'and knocked their brains out." "James Guthrie, first tying one hand behind

him, with the other could whip any man in Oxford who would also fight one-handed. Who doubts that the vigor soevinced had much to do with the faithful, arduous life's work he did, and did so well that all Scotland is to-day justly proud of him?" "Have not the great bodies of those two young giants of the American pulpit, Phillips Brooks and Joseph Cook, proved most valuable accessories to their great brains?" Who doubts that the rugged physique born of a frontier life had much to do with the fact that Zachary Taylor "never knew when he was whipped." Leonardo da Vinci, the engineer, architect, sculptor, and painter, who could draw a perfect circle with his unaided hand, "could not the less break a silver piaster between his two thumbs and two fore-fingers;" and "often astounded his visitors by jumping to the ceiling and knocking his feet against the bells of a glass chandelier." Look at this picture of Bismarck. "He is a powerful man. That is what strikes at once everyone who sees him for the first time. He is very tall and of enormous weight, but not ungainly. Every part of his gigantic frame is well-proportioned—the large round head, the massive neck, the broad shoulders, and the vigorous limbs. He is now more than sixtythree, and the burden he has had to bear has been usually heavy; but though his step has become slow and ponderous, he carries his head high-looking down, even, on those who are as tall as himself-and his figure is still erect. During these latter years he has suffered frequent and severe bodily pain, but no one could look upon him as an old man, or as one to be pitied. On the contrary, everybody who sees him feels that Prince Bismarck is still in possession of immense physical power." Who can know these things without the ambition to be a man in every sense of the word, rising high within him. The story is told of a young lady who fainted at the mention of "undressed lumber;" and there are plenty of namby-pamby young men who would faint just as easily at the idea of handling it as a means of earning their living. Would it not be well for them were they for a little while under the training of old McDonald of Keppoch, the Scottish chief, "of whom it is told that, camping out one night with a portion of his clan, he went and kicked the snow from under his son's head,—which the youth had piled together so as to form a sort of pillow,—declaring that 'the young rascal, by his degenerate effeminacy, would bring disgrace on the clan."

It is true beyond question that the preservation of the physical balance is the foundation of all success. Perfect mental equipoise and extended mental labor are impossible without it. Yet this is not the reason that its extended discussion is admitted here. It is so recognized because this is the strongest motive which can be urged for the intelligent care of the body. The real right of title by which this subject holds these many pages, is found in the fact that physical balance means a normal reproductive apparatus. Loss of physical balance means an irritated, over-excitable, harrassing reproductive apparatus. The whole question whether you shall be the proud ruler of your own reproductive system, or the humiliated slave of its tyranny, finds almost complete answer here. He who is owned by a sexual organism is a weak, useless, lying, cowardly bundle of vileness. The man who possesses the procreative power is he of the knightly spirit within the physical citadel. He mistakes lions for dogs and dispatches them accordingly, and feels no temptation to take refuge from any difficulty in cowardice or mendacity. Without this citadel you cannot hold your knighthood, for it will be at the mercy of constant attack from all sorts of depraved marauders. If you will not take pains to build up this citadel, you will suffer in the very quality of your inner self, and your work will correspondingly deteriorate in quality as well as quantity. There is no way but by faithful physical culture, that you can build up brain, body and self-control, the three interdependent pillars of character.

Drugs and doctors can never do the work. You may have an attack of cholera morbus, and the doctor can help you out. But all the drugs in the Materia Medica never imparted the elasticity and nobility of health. Ponce de Leon never found his spring of perpetual youth, and all the doctors since have never been able to find it, and the chances are that we shall never be able to bamboozle nature into believing that any potion we may offer her is the blood and nerve and tone and elixir of life. And I take it for granted that de Leon did not look for any such constipated, headachey, slim, pale, squeezed-lemon sort of youth in his spring as we see far too It is no disgrace to inherit delicate bodies, often to-day. but it is just as much a disgrace not to train up that body in the way it should go, as it is to leave the mind and heart uncultured, just exactly. It is just as creditable to let the mind run to seed, as it is to let the body sprawl around in this world as if it were some huge misshapen spider, which had to be stepped upon before it could attain the estate most agreeable to the civilization of to-day.

Having by faithful care won physical vigor, do not squander it in your work. Do one thing at a time. Don't be doing half a dozen things at the same time all day, doing nothing well, and coming out at night tired and dispirited and distracted. If the world be coming to an end, you will accomplish more and work faster by doing one thing at a time. Decide with definite arbitration whether this individual thing shall be done next, and then do it thoroughly and calmly while all the world waits. Have definite habits of study and reading. Do not take up the last Review and wander through it, laying it down with a sigh that there is so much to know, and a discouraged brain which knows nothing positively that was between its covers. Decide relentlessly what you can afford to read, and read it, letting no sentence slip by half-understood, and when you have finished, your brain will be stimulated by the exercise, and the

consciousness that it knows just what the eyes have read. Habits of accuracy in work will wonderfully lessen its strain. Discountenance the blues. Care is an enemy to life.

"Care to our coffin adds a nail, no doubt;
And every grin, so merry, draws one out."

Don't worry—worry kills more men than work. With artery and nerve and sinew of even pulse and equal tension and elastic strength, with brain buttressed by a balanced body, built up by the boldest discipline, mobilized by methodical accuracy of work and study, you will find yourself translated into another life whose radiance is beyond the poor compliment of words, whose peace floweth like a river, whose purposes satisfy, whose hope faileth not, whose love is supernal. If there be those who entertain grave doubt of their ability to meet the drafts made upon the successful man of to-day in the sedentary occupations, even though they strive to live rightly, I would remind them that the mawkish sentimentality of the day which exalts the commercial and professional pursuits, and degrades manual labor is one of the most contemptible jingoisms that ever assumed the epidemic type. I should much rather catch the itch, than be the victim of a contagion so loathsome that it withers common sense and blasts true-heartedness. Give me an outer covering of scabs beneath which is a sturdy, genuine, great-hearted manhood, rather than a skin of velvet which encloses a religion of kid gloves, a morality of cologne, a heart of corsets, an intellect of neck-ties, and a soul upon the walls of whose chambers is found no inscription save in listless hand the one word, "Self." A few weeks ago a friend told me that he had just been up in Northern Dakota, had seen the great Dalrymple farm, and had counted in one day sixty reapers at work gathering in the harvests of that one farm. And I said to myself, I wish I could tell that to every young man in our country. It seems to me that it might open the eyes of that great multitude of young men who are saying

to themselves, "There are just two things before me, life in a large city, or a perpetual badge of inferiority." And the voice of Newman Hall sounds in my ear clear and strong, across the wild waves of the Atlantic, as he declares, "There is dignity in toil—in toil of the hand as well as toil of the head—in toil to provide for the bodily wants of an individual life, as well as in toil to promote some enterprise of world-wide fame. All labor that tends to supply man's wants, to increase man's happiness, to elevate man's nature—in a word, all labor that is honest—is honorable too. Labor clears the forest, and drains the morass, and makes 'the wilderness rejoice and blossom as the rose.'"

And the mighty voice of our own nobleman, Horace Mann, makes answer from this side of the ocean. "Let the young remember there is nothing derogatory in any employment which ministers to the well-being of the race. It is the spirit that is varried into an employment that elevates or degrades it. The ploughman that turns the clod may be a Cincinnatus or a Washington, or he may be brother to the clod he turns.

"No matter what may be the fortunes or the expectations of a young man, he has no right to live a life of idleness. In a world so full as this of incitements to exertion, and of rewards for achievement, idleness is the most absurb of absurdities, and the most shameful of shames. In such a world as ours, the idle man is not so much a biped as a bivalve; and the wealth which breeds idleness—of which the English peerage is an example, and of which we are beginning to abound in specimens in this country—is only a sort of human oyster-bed, where heirs and heiresses are planted, to spend a contemptible life of slothfulness in growing plump and succulent for the graveworm's banquet."

So let me say to every young man who may see this page. There is no doubt about it. You are fitted for some work,—a work of hands or head, it matters not which, so long as you put a true heart into it whichever it may be;—a noble work, to be

done in noble spirit, not with galled shoulders and a jaded spirit;—a work which you are competent to perform and to which you are equal;—a work which no one else in the great round world can do quite as well as yourself, for it is the work given to you individually to do;—a work the doing of which in its every day insignificance of detail, with all nobility of purpose and singleness of heart shall inevitably lead you up toward the perfect Pattern, until that sunrise come whose trumpet shall sound the reveille calling you to a new life, and you awake to find that all unconsciously you have through simple faithfulness, attained the full stature of princely manhood.

"Is there, for honest poverty,
That hangs his head, an' a' that?
The coward slave we pass him by,
We dare be poor for a' that!
For a' that, an' a' that,
Our toil's obscure, an' a' that;
The rank is but the guinea's stamp,
The man's the gowd for a' that.

"Then let us pray that come it may,
As come it will for a' that,
That sense an' worth, o'er a' the earth,
May bear the gree, an' a' that.
For a' that, an' a' that,
It 's coming yêt, for a' that,
That man to man, the warld o'er,
Shall brothers be for a' that."

CHAPTER VI.

CELIBACY.

That celibacy which would steal the crown from marriage is guilty of high treason. That celibacy which sees nothing to be desired with a great desire in the home, and the family which creates the home, is fit only to be strangled. So, paradoxical though it may seem, the only fitting introduction to a discussion of celibacy, is an anthem in honor of marriage. Let all the watchmen upon the walls of our American Republic cry aloud and say, Blessed be every man who is married; blessed be every man by whose side stands a loving, true-hearted woman; blessed be every man whose crown of glory and of gladness is his wife, with children the jewelled setting thereof. Cursed be every man whose bleared and bloodshot eye sees not the divine presence hovering over this Ark of the Covenant; whose blasted and withered heart is not capable of bringing any offering to this altar of sacrifice. Cursed be every Nadab and Abihu who approaches this holy of holies with boisterous profanation; who in his heart of hearts greets thought of it with nothing but ribaldry. So let the watchmen cry, and let all the people answer, Amen and amen. And as we go on to speak of celebacy, and accord to it the high rank it deserves, -a peerage, speaking to us most eloquently by the pathetic voice of its enforced loneliness and isolation,—let it be understood that it is of the loval celibacy we always speak. Disloyal celibacy has no possible merit, and no plausible defense. It is a stench in the nostrils of all right-minded people. But there is a celibary worthy of the highest honor. It accords to marriage and the

family the most exalted position. It gladly recognizes the home as both the promise and fulfilment of all that is best in human society. It is great and noble because marriage is greater and nobler. During the dark days in the "60s" we could not afford to let President Lincoln shoulder a musket and go to the front. In no other way could be have so proved his loyalty, his soldierly qualities, as he did by sticking to his post in Washington. So we speak of that celibacy which proves its loyalty by its very bachelorhood. Between such a celibacy and marriage there is no antithesis. They are twin virtues. man ever lived a right life who had not been chastened by a woman's love, strengthened by her courage and guided by her discretion," says Ruskin. And the loyal heart, even though it be solitary, is not shut out by this saying, from a right life. Who can find an honest heart anywhere, fenced in by a wall of isolation though it be, that has not with it in its prison-house, mother, or sister, or shrine-centered memory? "I met in the street a very poor young man who was in love. His hat was old, his coat was threadbare; there were holes in his elbows; the water passed through his shoes, and the stars through his soul."

The enactments which have been aimed against celibacy, form a curious chapter in the history of law. It is, it always has been, and in the nature of the case it always will be the policy of the State to encourage marriage. At the present day and in this country the laws discriminating between marriage and celibacy consist only in certain exemptions, (of homestead, and the means of earning a livelihood), from attachment for debt, which are granted to the married man. But in other times, and in earlier days, no such thing as an upright celibacy was recognized. So it came about that, when set over against each other, marriage was everywhere honored and celibacy stigmatized. "The Jews excluded bachelors from assemblics of

the people. The Spartans interdicted them the theaters, and had a festival in which the women scourged them in the public places. The Romans did not receive their testimony in courts of justice; they solemnly crowned the virtuous citizens who had contracted many successive marriages. In the first era of Christianity, celibacy was a cause of inaptitude for public functions. For a long time in Germany, in Switzerland, the fortunes of bachelors reverted to the State after their death. other countries, they were subjected to a tax.*" In Turkey they are under rigorous governmental restraint to this day. "Probably no bachelor on earth knows so few of the delights of that ordinarily lawless and delightful condition as he of Turkey. Be he young or gray-headed it is all the same. Church and State are both against him. He must live with his parents, and while thus under tutors and governors the authorities content themselves with periodical reprobation of his manners and customs. But let him become an orphan, as in time he must, and his troubles begin. No householder may take a young man into his family without special permission from the civil authorities, and before this is granted, the landlord must be able to prove that the lodger can be waited on with no outrage to morals—that is, with no employment of the female members of the family. Should he take a house himself he is forbidden to live in it unless a sister or an elderly aunt is in charge; if not he must live as he can till somebody, for love or money, provides him a chaperone or some ancient woman who can play propriety. And even when secured the office includes also that of domestic spy, every word and act being reported to all the muftis and cadis and imams and ulemas, who, till he sets up a harem, regard him as given over to all iniquity."

If the courts were competent to decide the question whether, in a given case, the celibacy were honorable or dishonorable, I

^{*}OUR CONTINENT.

fBourgeois.

fancy we should profit by the enforcement of regulations as severe, even, as those of Turkey. Nor are those who, by lives of lawless lust, do all that one individual can do to break down that purity and good order of society without which society could not be, the only ones deserving of censure. There is another class of celibates who live irreproachable lives so far as any overt act against the integrity of the fabric of society is concerned, who yet nurse within themselves a certain shallow, supercilious, unworthy estimate of marriage. They put upon it a mild contempt. They treat it with indifference. In their view it is not a matter of any great moment. It is well enough for those who think they want that sort of thing. But as for themselves, they would rather be excused. Blind to the glory, insensible to the joy, ignorant of the nobility, vacant of any just conceptions of the divine institution of home and the family, the best that is in them becomes eaten out and shrunken by a dry rot; and, worse than all, their influence upon the youth with whom they come in contact, hidden behind the endorsement of an outwardly correct life, is pernicious and demoralizing in the extreme. Blind leaders of the blind, how can they escape the ditch! There is among my acquaintance a well-educated, brilliant, handsome, fast-rising physician who is to-day a single man because of this very disloyalty, and I cannot think of him without blushing in very shame for him and for his treason.

But I have no words to express my admiration for the grand army of single men who for the truest reasons are fighting the battle of life single-handed and alone; who have "through faith wrought righteousness, out of weakness were made strong, waxed valiant in fight, and turned to flight the armies of the aliens." They are a noble company. In it we find the youth, who in the vigor of a new-found manhood, must yet lead a grand, continent, celibate life, from twelve or fifteen to twenty five—a service worthy the endurance of a veteran hardness.

The ranks too are full of those who have attained the full stature of perfect manhood, kept in the service by reasons which their hearts alone know. To one poverty has said wait, and from the illumined countenance of high resolve has come the prompt reply, I will wait. To another filial duty has whispered wait, and the ringing answer has come swiftly, I am glad to wait; and he fills with cheer the declining years of the aged Father and Mother. There are hundreds in the rank and file to whom has been issued the order which Frederick the Great made his motto of earlier years, "Not yet," and right royally are they obeying orders like the good soldiers that they are. And who would be so sacrilegious as to attempt to tell the number of those whose deeply hidden hearts repeat the words of Tennyson;—

"Shy she was, and I thought her cold;
Thought her proud, and fled over the sea;
Fill'd I was with folly and spite,
When Ellen Adair was dying for me.

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"There I put my face in the grass— Whisper'd, 'Listen to my despair' I repent me of all I did: Speak a little, Ellen Adair!'

"Then I took a pencil and wrote
On the mossy stone, as I lay,

'Here lies the body of Ellen Adair;
And here the heart of Edward Gray!'

"Love may come, and love may go,
And fly, like a bird, from tree to tree;
But I will love no more, no more,
Till Ellen Adair come back to me."

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Who shall tell us how many devoted lives are chanting with Burns,

"Flow gently, sweet Afton, among thy green braes, Flow gently, I'll sing thee a song in thy praise; My Mary's asleep by thy murmuring stream, Flow gently, sweet Afton, disturb not her dream.

"Thou stock-dove whose echo resounds thro' the glen, Ye wild whistling blackbirds in yon thorny den, Thou green-crested lapwing thy screaming forbear, I charge you disturb not my slumbering fair.

"Flow gently, sweet Afton, among thy green braes, Flow gently, sweet river, the theme of my lays; My Mary's asleep by thy murmuring stream, Flow gently, sweet Afton, disturb not her dream."

All honor to the loyal and the true when they receive the winsome crown of wife and children. All honor to the loyal and the true when they receive the sorrowful crown of isolation. I do not for a moment doubt that the great Father over all has most wisely planned for the great multitude of His children in that He "setteth the solitary in families," and that by this agency He rounds out into fuller perfection the characters of men. For without this indescribable home influence we are in great danger of becoming narrow and one-sided and belittled. But when He seems to lead one of us in the other direction how should we "covet earnestly the best gifts" that we may not lose what should come to us through this sterner discipline which He has seen to be the best for us. The natural way of life is in the family; if we must walk outside this charmed circle, in the way which is the less natural, how much greater the manliness which must always be within us, that the special discipline do not break us down like the raw recruit in the gymnasium, but lead us on from strength to strength, until as approved gladiators we daily meet in gallant conflict all those wild and savage 294

beasts which are let loose within the arena of the human heart. Do not, however, make the mistake of supposing that this training calls for the banishment of the finer feelings.

"A millstone and the human heart are driven ever round;
If they have nothing else to grind, they must themselves be ground."

The gladiator must have a strong heart underneath his tunic, or the contest is lost ere it be begun. The celibate must have a big, warm, tender heart which welcomes all the world, yet stumbles not at the saying that "One, and one only, is the lover's creed," or he has missed the uplift which should have come to him through his isolation. Surrounded by the family, or hid in solitude, the heart should have equal, if not identical treasure. The only difference is in the depth of the mine at the bottom of which it lies in its unsuspected brightness and purity. I care not what name you give these heart qualities. Sum them up under the one word love, if you like. But one thing is certain. Without this central motor power the whole man is at a stand-still. With it, anything, everything becomes possible to him.

"Ah, how skilful grows the hand
That obeyeth Love's command!
It is the heart, and not the brain,
That to the highest doth attain,
And he who followeth Love's behest
Far excelleth all the rest!"

The many pass through life with this inspiration incarnated and walking by their side. The few must walk alone as far as our outward vision can behold them, but if they bear themselves valiantly we may be sure that the same inspiration walks with them. But the spirit feet tread so noiselessly that we hear them not, the spirit hand that leads and supports we do not see, the spirit voice whispers so softly that we hear it not, and we wonder at the difficulties conquered and the heights attained

by one whom, we fancied, walked alone. It is a grand attainment to be able to walk by the unseen when the incarnate is denied us; to walk by faith when sight is withheld from us. For the advantage of all this overcoming of difficulties, of all this discipline as we call it, is in the broadening and deepening and strengthening of all those qualities which go to make up the thoroughly manly man. We group together these qualities and call them character. And the growth of these qualitiesof character—is dependent upon just such homely, every-day besetments as surround the single man, in what seems to him a most unattractive array. But we must not be too quickly impatient of those opportunities which come to us in a truly homespun disguise. "Self-denial and discipline are the foundation of all good character, the source of all true enjoyment, the means of all just distinction. This is the invariable law of our nature. Excellence of every sort is a prize, and a reward for virtuous, patient, and well-directed exertion, and abstinence from whatever may encumber, enfeeble, or delay us in our course. The approach to its lofty abode is rightly represented as steep and rugged. He who would reach it, must task his powers. But it is a noble task, for, besides the eminence it leads to, it nourishes a just ambition, subdues and casts off vicious propensities, and strengthens the powers employed in its service, so as to render them continually capable of higher and higher attainments."

Again, Samuel Smiles tells us with true Scotch directness that "The crown and glory of life is character. It is the noblest possession of a man, constituting a rank in itself, and an estate in the general good-will; dignifying every station, and exalting every position in society. It exercises a greater power than wealth, and secures all the honor without the jeal-ousies of fame. It carries with it an influence which always tells,—for it is the result of proud honor, rectitude, and consistency,

^{*}John Sargeant.

-qualities which, perhaps, more than any other, command the general confidence and respect of mankind." While Professor Huxley remarks in the same address from which I have already quoted, "The other point which I wish to impress upon youis, that competitive examination, useful and excellent as it is for some purposes, is only a very partial test of what the winners will be worth in practical life. There are people who are neither very clever, nor very industrious, nor very strong, and who would probably be nowhere in an examination, and who yet exert a great influence in virtue of what is called force of character. They may not know much, but they take care that what they do know they know well. They may not be very quick, but the knowledge they acquire sticks. They may not even be particularly industrious or enduring, but they are strong of will and firm of purpose, undaunted by fear of responsibility, singleminded and trust-worthy. In practical life a man of this sort is worth any number of merely clever and learned people. course I do not mean to imply for a moment that success in examination is incompatible with the possession of character such as I have just defined it, but failure in examination is no evidence of the want of such character.

"And this leads me to administer from my point of view the crumbs of comfort which on these occasions are ordinarily offered to those whose names do not appear upon the prize list. It is quite true that practical life is a kind of long competitive examination, conducted by that severe pedagogue Professor Circumstance. But my experience leads me to conclude that his marks are given much more for character than for cleverness. Hence, though I have no doubt that those boys who have received prizes to-day have already given rise to a fair hope that the future may see them prominent, perhaps brilliantly distinguished members of society, yet neither do I think it at all unlikely that among the undistinguished crowd there may lie the making of some simple soldier whose practical sense and

indomitable courage may save an army led by characterless cleverness to the brink of destruction, or some plain man of business who by dint of sheer honesty and firmness may slowly and surely rise to prosperity and honor, when his more brilliant compeers, for lack of character, have gone down, with all who trusted them, to hopeless ruin. Such things do happen. Hence let none of you be discouraged. Those who have won prizes have made a good beginning; those who have not may yet make that good ending which is better than a good beginning. No life is wasted unless it ends in sloth, dishonesty or cowardice. No success is worthy of the name unless it is won by honest industry and brave breasting of the waves of fortune Unless at the end of life some exaltation of the dawn still hangs about the palpable and the familiar; unless there is some transformation of the real into some of the best dreams of youth, depend upon it, whatever outward success may have gathered round a man, he is but an elaborate and a mischievous failure."

I do not wish to be misunderstood. I would say plainly that the discipline of celibacy, that discipline which rightly received can mold into such high character and strong manhood, is twofold. There is the discipline which comes from the deprivation of that incomparable companionship between husband and wife, which finds no counterpart in any other relation of life, the helpfulness of which can be understood only by those whose lives it has gladdened. This has already been mentioned, and constitutes one department of this double school of training. The other is the physical deprivation which comes from the denying of an instinct and appetite which physiologists have always set down as being the strongest natural impulse save only that of self-preservation—that is, the desire for life itself. To utterly deny so clamorous an instinct any expression whatever is no mean task. The will, the resolution, the endurance required, the strength which shall be equal to any tumultuous rush of insurrection which may make sudden onslaught, is

known only to those who have fought the battle. We hear much of the value of self-control, of mastery over self. I would endorse all that has been said of its value and grandeur. I would make it stronger if any word of mine could possibly add to the golden words spoken in its praise by the wise and good of all ages and races. What I do wish to say is that I know of no better field on which to cultivate this quality of qualities than in the contest under consideration. Yet how silent have the world's leaders been on this point! I submit that the unity of opinion has been very remarkable which all investigators have expressed regarding the rank of physical desires. They all agree in putting the desire for life first, the reproductive desire second. If there have been any dissenters from this opinion, I have not heard of them. Notice that this places it superior to that for food and drink, and the multitude of physical desires. This being granted on all hands, I would further call attention to the fact that the instinct of self-preservation lies dormant to a great extent and most of the time. If you wish to indulge in refinements you may urge that in a certain sense we eat and drink, are careful to avoid exposure, etc., because of the life-instinct. But I have reference to the supreme test. It is not often that you and I are put to this test. It is not often that we are placed in the position of the cashier who, with a revolver at his temple, is given the choice of the betrayal of his trust or the forfeiture of his life. It is not often that we are called to stand by the side of John Maynard and face the flames, or suffer a greater loss than that of life. Very rarely are we asked to stand the supreme test on the lifeinstinct. So we turn to that twin instinct which presses close on the heels of the first in its intensity and power. Who shall say how often its supreme test may come to us? Once in a life-time there may tremble in the balance life on one side and character on the other. Who shall undertake to fix for us the number of the times when this mighty appetite flings itself

upon the scales of our being, while character must fly to the opposite side and unfalteringly outweigh it? Who shall say what surroundings shall make us safe from attack, what environment shall preclude assault? I say this not to our shame but to our glory. "'As often,' says St. Antoine, 'as you resist, so often are you crowned." Even the saints have been tormented by bad thoughts. To conquer a temptation against chastity, St. Benedict threw himself among thorns, St. Peter of Alcantara cast himself into a frozen pool. why did God refuse to remove the temptation? That, by resisting it, the saint might gain greater merit. 'For power is made perfect in infirmity.' '' I copy this from a Roman Catholic book of "Instructions." I honor our friends of this faith for the noble utterances they have given us on this subject. We began by speaking of the intrinsic value of character, and the mastery over self, the self-control, which leads up to character. It seems to me that it is fair to insist that the rank of the reproductive instinct, barely second to that of life itself, plus the frequency with which it is put to the supreme test as against character, beyond all comparison with that of the life instinct, gives it a prominence as a school of self-mastery which dwarfs into insignificance all the other necessary physical restraints put together. More than this, when He of Nazareth laid down the precept that the thought, the desire, the will to do, was equivalent to the deed, He did not utter an abstract spiritual truth alone, but the most enlightened materialistic philosophy of to-day as well. For this test and discipline of which we are speaking is not physical alone, but mental as well. Dr. Acton, the best authority in medicine on these topics, well savs, "I would exclude from the category of continent men those (and they are more numerous than may be generally supposed), who actually forbear from sexual intercourse, but put no restraint upon impure thoughts or the indulgence of sexual excitement, provided intercourse does not follow. This is only

physical continence; it is incomplete without mental continence also. Such men as these, supposing the sexual excitement is followed by nocturnal emissions, as it often is, and this with great detriment to the nervous system, must not be ranked with the continents; to all intents and purposes they are Onanists." The emphasis placed upon the last word is so placed by Dr. Acton. Dr. J. G. Holland, the late editor of The Century, and once a practicing physician, takes the same ground in writing of the "Vices of Imagination." He says:

"There is an enchanted middle ground between virtue and vice, where many a soul lives and feeds in secret, and takes its payment for the restraint and mortification of its outward life. I once knew an old dog whose most exalted and delighted life was lived upon this charmed territory. The only brute tenants of the dwelling where he lived were himself and a cat. Rover bore no ill-will toward his feline companion-in fact, he was too good-natured to bear ill-will toward anything. He had been detected once or twice in worrying her, and one or two severe floggings had taught him that the sport would not be tolerated. Still he did not stop thinking about it; and at every convenient opportunity he planted himself in her way, watched her as she lurked for prey, scared her by growls and feints, and kept her in a fever of apprehension and fretfulness. Now, while I do not believe that he intended her the slightest mischief, I have no doubt that, in his bloody imagination, he had slain her a thousand times, chased her all over the neighborhood, and torn her limb from limb. In short, while he knew that he must not worry her, he took the satisfaction that lay next to it—that of being tempted to worry her, and found in the excitement of this temptation the highest rewards of his self-denial.

"Humanity has plenty of Rovers of this same sort—men and women who lead faultless outward lives, who have no intention to sin, who yield their judgment—if not their conscience—

to the motives of self-restraint, but who, in secret, resort to the fields of temptation, and seek among its excitements for the flavor, at least, of the sins which they have discarded. This realm of temptation is, to a multitude of minds, one of the most seductive in which their feet ever wander. Thither they resort to meet and commune with the images, beautiful but impure, of the forbidden things that lie beyond. In fact, I have sometimes thought there were men and women who were really more in love with temptation than with sin-who, by genuine experience had learned that feasts of the imagination were sweeter than feasts of sense. Whether this be the case or not, I have no doubt that the love of temptation, for the excitement which it brings, is very general, even with those whom we esteem as patterns of virtue. The surrender of the soul to these excitements is the more dangerous from the fact that, by some sort of sensual sophistry, they are conceived to be harmless, and without the pale of actual sin. There is no intention to sin in it, but only an attempt to filch from sin all the pleasure that can be procured without its penalty.

"Playing with the temptation to sin is doubtless accompanied with less apparent disaster than the actual commission of it, and, so far, is a smaller evil; but it is an evil, and, essentially, a sin. The man who loves and seeks the excitement of temptation, shows that he is restrained from sin by fear, and not by principle—that, while his life is on the side of virtue, his affections lean to vice. This is a sham life, and a mean life. There are multitudes to whom temptation comes from the forbidden world of sin, but it comes unbidden and unwelcome—on the lines of old appetites and old passions not yet thoroughly under control—and it is fought against and driven out. It is the voluntary going out of the soul after temptation, as a kind of unforbidden good, that I challenge and question. It is the willing, secret sin of imagination that I denounce, as not only a sin essentially, in itself, but as the path over which every soul

naturally travels to the overt act of transgression which lies beyond. It is a kind of sin that injures none but the sinner, directly; but fouler, more rotten-hearted men I have never met than the cowardly hypocrites whose lives are spent in dallying with the thought of sins which they dare not commit.

"We often wonder that certain men and women are left by God to the commission of sins which shock us. We wonder how, under the temptation of a single hour, they fall from the very heights of virtue and of honor into sin and shame. The fact is that there are no such falls as these, or there are next to These men and women are those who have dallied with temptation-have exposed themselves to the influence of it, and have been weakened and corrupted by it. If we could get at the secret histories of those who stand suddenly discovered as vicious, we should find that they had been through this most polluting preparatory process—that they had been in the habit of going out and meeting temptation in order that they might enjoy its excitements-that underneath a blameless outward life they have welcomed and entertained sin in their imaginations, until their moral sense was blunted, and they were ready for the deed of which they thought they were incapable.

"I very earnestly and gratefully believe in the exercise of a divinely restraining influence upon the minds of those who are tempted, but I believe there is a point beyond which it rarely goes. I do not believe that God will interpose to prevent a man from sinnning who either seeks, or willingly encounters, the temptation and the opportunity to sin. When a man finds charm in opportunity, and delight in temptation, he has already committed in heart the sin which he shrinks from embodying in action; and God rarely stands between him and further guilt. We are to keep ourselves from opportunities, and God will keep us from sin. It is all that can be expected of a being of infinite purity that he shall guard us from the power of temptation that comes to us. He must be a hard and irrever-

ent, or a very ignorant and deluded man, who can pray to be delivered from the overcoming power of a temptation into whose atmosphere he willingly enters. In fact, we are taught to pray, not that we may be delivered from the power of temptation, but that we may not be led into it.

"It may be said with measurable truthfulness that half the art of Christian living consists in shunning temptation. A man who has lived to middle life has observed and studied himself to little purpose if he have not learned the weak points of his own character, and the kind of temptations that assail him with the most power; and it is doubtless true that any man who really loves a pure and good life will avoid a temptation as he would the sin to which it would lead him. I can have but little charity for those who apologize for their frequent falls from virtue by charging the blame upon the power of temptation, because temptation and opportunity come to them unsought no oftener than to others. It is the man who loves vice, and delights in temptation, who is subject to their power. I have no faith in the reformation of a drunkard who carelessly passes his accustomed tippling-shop, and carelessly looks in.

"We are to avoid temptation because it is only as vice is glorified, and its charms exalted by the power of imagination, that it appears charming and attractive to us. A vision of naked vice, of whatsoever sort, is a vision of deformity. There are thousands among those who delight in the excitements of temptation, voluntarily sought, who would shrink with horror and disgust from a sudden introduction to the presence of a vice toward which they have been attracted from a distance. There is no beauty in beastliness, save that which an excited imagination lends to it. It is by no inherent charm that it draws men and women toward it. It is as low and loathsome as the serpent around whose evil eyes the poor bird flutters, until it drops, a victim to the fangs that await its certain coming.

"I have said thus much generally of the sins of the imagina-

tion, aware that my remarks apply mainly to one variety of temptations—the most dangerous and the most seductive of all. There is nothing charming in the thought of murder, in the contemplation of a great revenge, in theft, and in the majority Imagination has no sophistry by which such crimes may be justified, and no power to wrap them in an atmosphere of beauty. The sins of the imagination are mainly those which contemplate the illicit indulgence of natural and normal passions and appetites, the temptations to which come in upon the lines of legitimate and heaven-ordained sympathies. among the meshes of that which is legitimate and that which is illegitimate—that which is forbidden and that which is unforbidden—that the moral sense becomes involved and moral purity is compromised. It is because men and women are led out into the field of temptation by some of the sweetest and strongest sympathies of their natures that they feel no alarm and apprehend no danger. It is because they entertain no design to sin that they linger there without fear. Oh! if this imaginary world of sin could be unveiled—this world into which the multitude go unknown and unsuspected-to dream of delights unhallowed by relations that may only give them license -how would it be red with the blush of shame!

"This world of sense, built by the imagination—how fair and foul it is! Like a fairy island in the sea of life, it smiles in sunlight and sleeps in green, known of the world not by communion of knowledge, but by personal, secret discovery! The waves of every ocean kiss its feet. The airs of every clime play among its trees, and tire with the voluptuous music which they bear. Flowers bend idly to the fall of fountains, and beautiful forms are wreathing their white arms, and calling for companionship. Out toward this charmed island, by day and by night, a million shallops push unseen of each other, and of the world of real life left behind, for revelry and reward! The single sailors never meet each other; they tread the same paths

unknown of each other; they come back, and no one knows, and no one asks where they have been. Again and again is the visit repeated, with no absolutely vicious intention, yet not without gathering the taint of vice. If God's light could shine upon this crowded sea, and discover the secrets of the island which it invests, what shameful retreats and encounters should we witness—fathers, mothers, maidens, men—children even, whom we had deemed as pure as snow—flying with guilty eyes and white lips to hide themselves from a great disgrace!

"There is vice enough in the world of actual life, and it is there that we look for it; but there is more in that other world of imagination that we do not see—vice that poisons, vice that kills, vice that makes whited sepulchers of temples that are deemed pure, even by multitudes of their tenants. Let none esteem themselves blameless or pure who willingly and gladly seek in this world of imagination for excitements! That remarkable poem of Margaret Fuller, which ascribes an indelible taint to the maiden who only dreams of her lover an unmaidenly dream, has a fearful but entirely legitimate significance. It is a forbidden realm, where pure feet never wander; and all who would remain pure must forever avoid it. It is the haunt of devils and damned spirits. Its foul air poisons manhood and shrivels womanhood, even if it never be left behind in an advance to the overt sin which lies beyond it.

"The pitcher that goes often to the well gets broken at last. I presume that there is not one licentious man or ruined woman in one hundred whose way to perdition did not lie directly through this forbidden field of imagination. Into that field they went, and went again, till, weakened by the poisonous atmosphere, and grown morbid in their love of sin, and developed in all their tendencies to sensuality, and familiarized with the thought of vice, they fell, with neither the disposition nor the power to rise again. It is in this field that Satan wins all

his victories. It is here that he is transformed into an angel of light. It is on this debatable ground, half-way between vice and virtue, whither the silly multitude resort for dreams of that which they may not enjoy, that the question of personal perdition is settled. A pure soul, sternly standing on the ground of virtue, or a pure soul standing immediately in the presence of vice, not once in ten thousand instances bends from its rectitude. It is only when it willingly becomes a wanderer among the wiles of temptation, and an entertainer of the images it finds there, that it becomes subject to the power that procures its ruin.

"To the young, especially, is the exposition of this subject necessary—to those whose imaginations are active, whose passions are fresh and strong, and whose inexperience leaves them ignorant of consequences. There is no field of danger less Through many years of attendance upon talked of than this. the public ministrations of Christianity, I have never but twice heard this subject pointedly and faithfully alluded to. Books are mainly silent upon it. Fathers and mothers, faithful in all things else, shrink from the administration of counsels upon matters which they would fain believe are all unknown to the precious ones they have nurtured. Thus it is in schools, and thus it is everywhere, where counsel is needed, and where it is demanded. An impure word, a doubtful jest, a tale of sin, drunk in by these fresh souls, excites the imagination, and straightway they discover the field of contemplation, so full of danger and of death, and learn all its paths before they know anything of the perils to which they subject themselves. Let me say to these, what they hear so little from other lips and pens, that whenever they find themselves attracted to it, they can never abide in it, or enter upon it, without taint and without sin. Sooner or later in their life will they find that from all willing dalliance with temptation, and unresisted entertainment of unworthy and impure imaginations, their character has suffered an injury which untold ages will fail to remedy."*

^{*}Gold-Foil.

The well-known Dr. Dio Lewis uses the following vigorous language in regard to this matter of mental self-abuse:

"Where one person is injured by sexual commerce, many are made feverish and nervous by harboring lewd thoughts. Rioting in visions of nude women may exhaust one as much as an excess in actual intercourse. There are multitudes who would never spend a night with an abandoned female, but who rarely meet a young girl that their imaginations are not busy with her person. This species of indulgence is well-nigh universal; and as it is the source of all the other forms—the fountain from which the external vices spring, the nursery of masturbation and excessive coitus—I am surprised to find how little has been said about it. I have looked over many volumes upon sexual abuses, but do not recall a single earnest discussion of this point. Believing that this incontinence of the imagination works more mischief than all other forms of the evil-that. indeed, it gives rise to all the rest-I am astounded that it has received so little attention.

"All overt sins and crimes begin, we know, in the thoughts or imagination. A young man allows himself to conjure up visions of naked females. These become habitual and haunt him, until at last the sexual passion absorbs not only his waking thoughts, but his very dreams. Now, if his education and surroundings make actual intercourse impracticable, he will probably fall into masturbation, or, if forewarned in regard to that destructive practice, he may restrain himself from all out ward indulgences while he still riots in lascivious fancies.

"Ah, I wish I could say what ought to be said in this connection. Here is one of the great fountains of our woes. Although we may outwardly present a blameless life, how many of us could wear a window in our breasts without covering our faces for shame? (A gentleman who sits near while I am writing says, 'I should prefer one with ground glass.')

"So far as the record is preserved, unchastity has con-

tributed above all other causes to the exhaustion and demoralization of the race. And we shall not be likely to vanquish this monster, even in ourselves, unless we make the thoughts our point of attack. So long as they are libidinous, we are indulging in sexual abuse, and are almost sure, when temptation is presented, to commit the overt acts of sin. If we cannot succeed within, we may pray in vain for help to resist the tempter outwardly. But if we ask for assistance to cleanse the inner man, and supplement our prayers by hearty effort, we are sure to win. A sincere, earnest determination in this direction will never fail.

"A gentleman of some intelligence had lived a continent life to the age of thirty-nine. A successful manufacturer, he had acquired wealth and kept up a hospitable home, but had never married. In point of personal purity, he was regarded as a very Joseph by his friends, among whom I had the honor to enjoy a place. What was my surprise when he consulted me with reference to seminal weakness! I made careful inquiries about his habits. Had he practiced masturbation? 'Never!' Had he indulged in familiarities with some woman? 'Never!' And yet here was a case of frequent nocturnal emissions, with all the usual symptoms of exhaustion.

"I said, 'There is but one explanation, and that is, that your imagination has been filled with pictures of nude women and sexual intercourse.'

"He owned it: 'If this is important, I am free to confess that I am rarely alone a moment without being occupied with such visions. And my dreams, too, are full of them.'

"I explained the mischief, and warned him that unless he could break up the habit altogether, he was a ruined man.

"But,' said he, 'I can't prevent my thoughts. I can't decide what shall come into my mind!'

"'Yes, you can,' I answered; 'you can decide precisely what

shall occupy your mind. It is just herein that a man is superior to a horse.'

- "'Oh,' he replied, 'I am sure that is impossible; the thoughts will come unbidden.'
- "'Now,' said I, 'you must try the following plan, and report to me. Fix it in your mind that a sensual idea is dangerous and harmful; then the instant one comes it will startle you. By an effort you change the subject immediately. You can, it you are in earnest, set such an alarm in your mind, that if a lascivious thought occurs to you when asleep, it will waken you. (A number of persons have testified to this.) If when you are awake the enemy enters your mind, you will be aroused, and expel it at once without a very serious effort. If there is a moment's doubt, spring up and engage in some active exercise of the body. Each effort will be easier, until after a week or two you will have, in this particular, complete control of your thoughts; and that will soon make you feel a good deal more like a man.
- "'The fever and excitement of voluptuous revery wears out the nervous system, emasculates manhood, and shuts out all the noblest visions in this and the upper world.
- "'Besides this, there must be an observance of health-laws. It is idle, over-fed people who suffer most from all animal excitements. Work hard, or by brisk walking and gymnastics give yourself two or three good sweats every day, and eat plain, nourishing, unstimulating food. Go without supper. Retire early, and rise early. Drink freely of cold water both on rising and going to bed, and sleep in pure air.'
- "After two months' faithful observance of this regimen, the atient sent me a note, which ran as follows:
- 'MY DEAR SIR:—I cannot refrain from writing you of the result of your prescription. And that you may comprehend the happy change which has come over me, I will describe my condition when I sought your advice. I could not look upon a woman without my imagination being busy with her person, and when alone, I was constantly occupied with thoughts of women;

and it was never with their moral qualities. Sometimes these thoughts would haunt me not only during my waking hours, but in my sleep. Three or four times a week, and sometimes every night in the week, these dreams would provoke nocturnal emissions. I must confess that during the month before I sought your advice I was in a constant fever. I loathed myself. About a week before I consulted you I went to New York, desperately resolved that I would seek with some abandoned women a complete relief from by burning lust. I went so far as to order such a companion through the clerk of the hotel where I stopped, and retired to my room to await her coming. Then my mother's angel face came to me, and the sweet, loving face of that other woman—that dear girl whose untimely death has been the one great sorrow of my life—her face came and looked into mine with an unearthly love. I hurried to the office made an excuse, hastened to another hotel, and came back to my home the next morning. All this now seems like a horrid dream.

'My dear friend, I do not know in what terms to express my gratitude that all this is past. I found it difficult to control my thoughts at first, but as you advised, I soon fixed the thought of danger in my mind, so that when a lascivious fancy appeared, it startled me, and immediately I took out of my pocket the card you suggested, on which I had written ten words, each suggestive of a subject in which I am interested. Looking over this card, I had no difficulty in changing the subject at once. This policy, with daily exercise and plain food, has given me a complete victory. I can now meet my lady friends and converse with them with real pleasure. My thoughts are not more lecherous and unclean than they would be in the presence of sisters.

'The sense of manliness which I now feel in conversation with ladies, the real profit and social delight which their conversation affords me, these, added to cooler, better nerve, render the change a very happy one. I now believe what, you will remember, I began with doubting, namely, that the great sexual waste is in lecherous thought. And I do not see how men are to become chaste unless they can learn to control their thinking. If their brains are hot with lust, if within they throb and burn as I did, I do not see how they are to keep themselves pure without.

'You will ask me about the nocturnal emissions. I can report an improvement, but I did not expect to get rid of that difficulty at once. I have no doubt, from my present condition, that I shall soon recover from this weakness and become a man again.

'With grateful respect, I am your friend,

'G. W.

"An Italian gentleman, of very high station and character, consulted me for a quite different affection; but in order to put me in possession of all the facts in reference to his state of

health, he related his history. He had been inconvenienced five years before with frequent emissions, which totally unnerved him. He determined resolutely that the first instant the image of a woman, or any other libidinous idea, presented itself to his imagination, he would awake, and to ensure his doing so, dwelt in his thoughts on his resolution for a long time before going to sleep. The remedy, applied with a vigorous will, had the most happy results. The idea, the remembrance of its being a danger, and the determination to wake, closely united the evening before, were never dissociated even in sleep, and he awoke in time. This precaution, repeated, finally cured him.

"Quite recently I have been made acquainted with another interesting case of self-cure. A young man of particularly bright faculties and good family asked my advice about spermatorrhæa. His seminal losses had been so frequent that he would probably have become insane but for his exceptionally rich endowments. I urged him to attempt what may be called moral self-treatment. He had long thought that if by some means he could awake before the emission occurred, he should soon recover his health. He had slept with a towel tied about his loins with a big knot upon his spine, so that he could not turn on his back (the position in which he generally found himself when awakened by an emission), and had tried several other expedients, but all without avail.

"I charged him to fix in his mind the idea that a lascivious image was dangerous—to think of it some minutes before going to sleep, and resolve firmly that if such a fancy entered his brain he would start up instantly. He has had but two emissions within the past year; and, what is scarcely less important, has learned the art of controlling his thoughts, so that the libidinous imagination which was the source of all his troubles is completely subordinated to his will."

^{*}Chastity.

In the legitimate exercise of the function of reproduction, speedy and complete repose of the reproductive system follows the accomplishment of its work. But when, under cover of that impenetrable seclusion which shields the little inner world of each individual heart even from the one who may be sitting by his side, we invite or allow salacious longings and voluptuous pictures to possess the fancy and troup through the halls of imagination, there follows an engorgement of the sexual apparatus which results in permanent damage. For, unlike the rapidly coming and as quickly retreating orgasm of the normal sexual exercise, this engorgement set up by a nerve-stimulus telegraphed from a diseased imagination, is continued into a more or less lasting congestion which ministers to the growth of an abnormal irritability and over-excitability of the reproductive organs; and this inflammable local condition, reflected in its turn upon the central nervous system, is productive of serious derangement of the general health. Drs. Van Buren and Keyes speak strongly on this point: "Excessive indulgence is bad at any time, but worst of all is stimulation without relief. This state is, unhappily, a common one among the unmarried men of large cities. Such individuals, looking at suggestive pictures, reading exciting books, taking part in impure conversation, become ripe subjects for nervous disease of an obscure sort, not only of the urethra but of the whole body." even go so far as to affirm that, "In fact, this undue stimulation, without appropriate relief, is far more often the cause of hypochondria, melancholy, and functional perversion, than is the masturbation to which the public generally ascribe it. Nor can such an individual, by any plan of fornication, escape the evil consequences to which stimulated but ungratified desire exposes him. Marriage with a pure woman may right himrarely anything short of this. Hence when such a case presents itself where marriage is impossible, or if the patient be already unhappily married, there is but one course left to advise, and

that is absolute continence and an effort at purity of thought, with strict avoidance of all possible temptations to erotic thought or act, whether entering through the mind, the eye, or the ear—whether actual or implied, direct or remote. Could such a patient imitate the heroic example of St. Augustine—a record of which that honest father of the Church has left behind—he could control the hygiene of his urethra, and doubtless save himself much distress in life."*

Nor is this control, necessary to a wholesome single life, of the fancies as well as of the body, to be looked upon as something grievous, irksome and heavy to be borne. The bare fact of the existence of the law, "Thou shalt not kill," is proof sufficient that before the law, and behind the law, things are so constituted that the desire to kill is an abnormal and unnatural condition of mind. Into the healthy mind the desire to murder cannot find entrance. The same is true of stealing. It is equally true of adultery. And when the law was laid down that "Every one that looketh upon a woman to lust after her hath committed adultery with her already in his heart," it was a proclamation that, in the natural order of things, such impulses and desires were abnormal and diseased. So let no man say, when called to purity of mind, "I can't help such thoughts. They are natural to me. You ask the impossible." They are not natural. They are unnatural. The excitements in which you allow yourself to riot are abnormal. They speak the distempered imagination. And you can expel them For what is natural is seldom very hard, and never impossible. In the darkness of the Middle Ages, Martin Luther saw this truth, and the need of its inculcation, and lifted up his voice against what he called "unchaste chastity." And in the enlightened nineteenth century medicine warns us of the physical danger attendant upon a polluted mind. Thus does the most advanced medical science of to-day echo the teachings of the great Galilean.

^{*}Genito-Urinary Diseases.

I am thus particular to note the mental and physical training which every single man, worthy the name, must undergo, because the real value of the man is summed up and included in his character, and I know no field for the exercise of the sturdy traits of character equal to this. Any man who has had the opportunity for knowing something of the number of those who fail of noble endurance under this training, will not think the position assumed a radical or unwarrantable one. I believe that it should be held up before the youth as one of the greatest conquerings of self. "Little monk, little monk," exclaimed the knight of Freundsberg, touching Luther upon the shoulder as he was making his way into that historic council-chamber, "thou has work before thee which I and many a man whose trade is war never faced the like of." Like kindly admonition, appreciative of the realness of the conflict and the necessity for the heroic qualities, should be whispered in the ear of every growing boy. He can and will fight a good fight if he be given to understand that the cause is a noble one. But our silent position has ever passed the word down the line to him who was in the thickest of the fight, that he ought to be ashamed of himself for having this battle on his hands at all. What won der that such a message, coming in the hottest of the conflict from those who ought to have given him the warmest sympathy, has made the strong heart weak with discouragement, and the strong arm feeble with doubtings. Shall we not rather send cheer after cheer, huzza after huzza, on the wings of the wind, to the ears of this grand army of the Republic, as they close in the hand to hand struggle for all that is greatest and best in manhood, for all that is true and beautiful and good in character.

It is an army of matchless beauty. In its ranks we see every young man of the land in his dawning manhood, with many of maturer years who have seen veteran service. With eager fingers and full hearts we fashion for them a banner which shall

bear, in golden letters of inscription, liberty's own battle-cry, "The truth shall make you free." For this knighthood to which you are called demands of you a greater service than asceticism. It requires that pure in heart and pure in body you shall not shun society—for it is only the coward slave of a libertine who is worthy the sentence of banishment—but mingle in its pursuits, share its common joys and sorrows, and by your knightly bearing and character lift it upward toward its noblest possibilities.

"Dream not of helm and harness
The sign of valor true;
Peace hath higher tests of manhood
Than battle ever knew."

It is to be noticed further, that the maintenance of the most loyal celibacy is perfectly consistent with the best health. I do not ignore the somewhat widespread impression to the contrary, nor forget that a health officer once wrote, "Marry or die," and that the statistics of the duration of life in the married and unmarried seemed in a measure to bear him out in this. Take, for instance, the experience of insane asylums. "The statistics of all civilized countries show a larger proportion of lunatics among those who are unmarried than among those who are married. In France, according to Dagonet, there is one insane person to every 528 celibates over the age of fifteen, while among those who are married the proportion falls to one in 1,523.

"Of 1,426 patients admitted into the Colney Hatch Asylum, England, during four years, the proportion was about equal, but then, as the married persons in England and Wales, according to the census of 1871, are more than twice as numerous as the single persons, it follows that the porportion of lunatics existing among single persons is about double that among the married.

"Most of the asylum reports of this country show like.

results. Taking one of the latest, that of the Illinois Eastern Hospital for the Insane at Kankakee, we find that of 424 patients admitted during the years 1881-'83, 209 were single, 152 married, 29 were widowed, 17 divorced or separated, and of 17 the civil condition was unknown.' *

All this is true. But we discover that the opinion that incontinence is incompatible with health, has been pushed to the front by those who would find excuse for their own excesses; and that the statistics of longevity have been compiled, on the celibate side, from the ranks of those who were nominally single, and presumably of correct life. The fact that the nominally single who really lead more or less dissolute lives, are especially open to influences tending to upset the reason, or to shorten life, at once takes the weight of conclusion from these figures for all those who have ever gotten a glimpse of the extent to which wickedness, associate and solitary, runs riot even in the most unsuspected quarters.

The truth is, the honest celibate will find in his celibacy no obstacle to the attainment of his highest mental and physical capabilities. Dr. Dio Lewis cannot restrain himself from the extended use of italics when he touches this point: "All eminent physiologists who have written on this point agree that the most precious atoms of the blood enter into the composition of the semen. A healthy man may occasionally discharge his seed with impunity, but if he chooses—with reference to great physical strength and endurance, as in the pedestrian, boat-racer, prize-fighter or explorer, or with reference to great intellectual and moral work, as in the apostle Paul, Sir Isaac Newton and a thousand other instances—to refrain entirely from sexual pleasure, nature well knows what to do with those precious atoms. She finds use for them all in building up a keener brain and more vital and enduring nerves and muscles."

The celebrated Hufeland speaks strongly in refutation of the

^{*}Treatise on Insanity. Wm. A. Hammond, M D.

popular error. "There was a time," he says, "when the German youth never thought of intimacy with the other sex till their twenty-fourth or twenty-fifth year; and yet nothing was then known of the pernicious consequences of this chastity, nor of any other imaginary evils of which people now dream; but these youths, increasing in strength as well as growth, became men, who by their size, excited the astonishment even of the Romans.

"People now leave off at the period when these began. They imagine they can never soon enough throw off their chastity; and young persons, long before their bodies are completely finished, begin to waste those powers which are destined for a higher use. The consequences are evident. These men become incomplete, half-formed beings; and at the period when our ancestors began to employ those powers, they, in them, are generally exhausted; they feel nothing but dejection and misery in their weakness; and a stimulus of the utmost importance for seasoning life is to them forever lost.

"It is incredible how far prejudice in this respect may be carried, especially when it flatters our inclination. I once knew a man who seriously believed that there was no poison more prejudicial to the human body than continence, and the consequence was that he was an old man in his twentieth year, and in his twenty-fifth died of old age.

"The present age has fallen so much into the taste of the times of chivalry, that all romances must now assume that form in order to please; and one, indeed, cannot help admiring the great, noble, and resolute manner of thinking and acting of these old Germans. It appears that the more sensible we are how far we have degenerated from them, the more we are excited by their example, and the more we are inflamed with a desire to imitate their conduct. But what a happiness would it be if we did not think merely of the object, but of the means to obtain it. That by which these people acquired so much courage, so

great powers both of body and mind, their bold, firm, and resolute character, which made them real men in the utmost sense of the word, was, in particular, their strict continence. youth of these men was destined to great exploits and undertakings, not to voluptuousness and dissipation; the physical propensity to love did not among them sink into mere animal enjoyment, but was exalted to a moral incitement to noble and heroic actions. Each bore in his heart the image of his beloved object, whether real or imaginary; and this romantic love, this indissoluble attachment, was the shield of his continence and virtue, strengthened the powers of his body, and communicated to his mind courage and unalterable resolution, by continually directing his attention to his fair one smiling to him at a distance, and whose favor could be gained only by glorious achieve-However romantic these notions may be, I find, on loser examination, great wisdom in this use of physical love, one of the strongest motives by which human nature is actuated. How widely different has the case become among us! propensity which by prudent management may be made the germ of the most exalted virtue, of the greatest heroism, has degenerated into whining sensibility, or mere sensual gratifica. tion, which people enjoy prematurely, and even to satiety; the passion of love, which in those periods was a security against dissipation, is at present the source of the greatest; the virtue of chastity, the principal foundation, without doubt, of moral firmness and manliness of character, has become a subject of ridicule, and is decried as old-fashioned pedantry; and what ought to be the last and sweetest reward of toil, labor, and danger, has become a flower which every strippling crops by the way. Why does Nature excite in our bosom this sighing after union, this all-powerful, irresistible propensity to love? Not, truly, to afford subjects for romance or to make a figure in the ecstatic raptures of poetry; but that it may serve as an indissoluble band to unite two hearts, to lay the grounds for a happy gen-

eration; and that, by this magic tie, our existence may be connected with the first and the most sacred of all duties. How fortunate would it be were we here to imitate the ancient method, and never to pull the fruit till we had planted!

"At present, we hear a great deal of strength and strong men: but I will believe nothing of it as long as I see that they have not strength enough to subdue their passions; for, that is the only cause of triumph, as well as the only sign of mental strength; and chastity is the school in which youth ought to be exercised, and to form themselves for becoming strong men.

"We in general find, in the old world, that all those from whom anything great or glorious was expected, were obliged to restrain physical love. So much were people then convinced that Venus absorbs the whole powers of man, that those given up to dissipation could never attain an exalted position."

In short, the highest medical authorities agree that there is no reason why the most perfect health, and the most absolute continence, should not go hand in hand. And any seeker after the right way who may have been troubled by assertions to the contrary, may rest assured that such opinions are mistaken.

Again, attention is called to the aids which may be had in a struggle which is by no means an easy one. From the physical side we have that of physical exercise. I need not enlarge upon this, sufficient has been said in the preceding chapter. I would remind you of the opinion expressed so cautiously in the letter from one of Yale's oarsmen. Dr. Acton in his work quotes an English athlete who bears the same testimony: "A striking example of what resolution can do was related to me lately by a distinguished patient. 'You may be somewhat surprised, Mr. Acton,' said he, 'by the statement I am about to make to you, that before my marriage I lived a perfectly continent life. During my university career my passions were very strong, sometimes almost uncontrollable, but I have the

^{*}The Art of Prolonging Life.

satisfaction of thinking that I mastered them; it was, how ever by great efforts. I obliged myself to take violent physical exertion; I was the best oar of my year, and when I felt particularly strong sexual desire, I sallied out to take my exercise. I was victorious always; and I never committed fornication; you see in what robust health I am, it was exercise that alone saved me.' I may mention that this gentleman took a most excellent degree, and has reached the highest point of his profession. Here then is an instance of what energy of character, indomitable perseverance and good health will effect.''

There can be no doubt that active muscular exertion is a most efficient aid, combined with that physical balance of which we have already spoken, and which includes the bath, sleep, and regularity of the evacuations.

From the mental side the first aid which we notice is likewise exercise-mental exercise. By this is meant a close mental pursuit, which shall be close enough to be absorbing. But I do not mean to endorse any "midnight oil" perversion. A friend once said to me that "God's light is better than man's light." There is time enough each day during the hours of daylight, for you to take all the mental exercise and do all the work which ought to be put into one cycle of twenty-four hours. . And you will find that excessive mental work is your enemy rather than your friend. For that means an abnormal demand upon the nervous system, which induces more or less irritation of the nervous centers, which is in turn reflected back upon the reproductive system and manifests itself in undue excitement. For the relation between the two is most intimate, and you may thus bring about the very state of affairs which you designed to avoid. The true idea is not that of over-work, but employ-You cannot banish unwelcome thoughts from your mind by resolving that they shall not come, and calling yourself hard names when they do come, any more than you can learn to love the right by resolving that you will because you

ought. The only way to learn to love the right is to put it in daily and constant practice wherever it finds a point of contact with your daily duties. And the only way to keep unclean thoughts out of your mind, is to have it too busy upon your pursuit, whatever that may be, to find time for anything else. Dr. Carpenter remarks in his physiology, "The author would say to those of his younger readers who urge the wants of nature as an excuse for the illicit gratification of the sexual passion, 'Try the effects of close mental application to some of those ennobling pursuits to which your profession introduces you, in combination with vigorous bodily exercise, before you assert that the appetite is unrestrainable, and act upon that assertion.' Nothing tends so much to increase the desire, as the continual direction of the mind towards the objects of its gratification, especially under the favoring influence of sedentary habits; whilst nothing so effectually represses it as the determinate exercise of the mental faculties upon other subjects and the expenditure of nervous energy in other channels."

Any young man may mark out for himself pursuits worthy of his best effort of head and of hand. If he think himself so placed that his daily task must be a very humble one, let him remember that it is the man who gives rank to the labor, whatever it may be—that "He who thinks his place below him, will certainly be below his place"—and, magnifying his office, throw into it his very best effort, assured that those who receive the promotions are those whose simple faithfulness lays hold of the nobility in little things.

"A servant with this clause
Makes drudgery divine,
Who sweeps a room as for Thy laws
Makes that and the action fine."

Socrates often quoted the saying of Hesiod, that no work was a disgrace, but not doing any work was a disgrace. Let any young man who thinks that his particular work offers no place

for mental activity, set his wits to work; for no occupation has yet been found which does not yield a rich return for all the brain which is put into it. If, on the other hand, it does not afford sufficient exercise for the muscles, the ways in which this lack may be met have already been pointed out. And there is no question but that employment, mental and physical, which shall absorb the energies, is the sine qua non of the loyally celibate life. To live singly, and at the same time nobly, one must have a preoccupied mind and body.

A somewhat ingenious plan for ridding the mind of unworthy imaginings, is the invention of Dr. Dio Lewis. "While striving to help young men into the habit of clean thinking, I have tried many expedients. With intelligent persons, what I call the 'card plan' has often proved useful. That is, to write on a card a number of words, each suggesting a subject of interest or a familiar train of thought. When an impure notion obtrudes itself, the idea of danger which has been associated with it will arrest the attention, the card is taken out, and a glance at it will help to shift the switch at once. One who came to me for advice about two years ago, sent in his 'card' the other day at my request, together with the following:

"'MY DEAR FRIEND.—The words on this card have helped me out of the habit of impure thought. I am sure they will seem queer to you, but here they are:

'HURRY-NONSENSE-DARLING-RIPSTICKS.'

'I take genuine pleasure in telling you something of the trains of thought which these words suggest to me. I was in the battle of the 'Wilderness.' In a slight skirmish which occurred on the evening previous to the opening of that awful conflict, I was standing behind a large tree reloading, when my companion, who was doing the same thing behind another tree ten feet from me, cried out to me, 'John, they've got a bead on you; a bullet just struck right over your head in the tree. Come, hurry up, and run to that big maple. Hurry! I ran to the other tree, but was not two feet from the first one, when a minie-ball struck exactly where I had stood. If I had been the tenth part of a second later, I should have been a dead man. The word 'hurry' on my card brings that scene before me again.

'Afterward I was sick of typhoid fever in a hospital in Washington. I suffered more than I thought it was possible to suffer. One night I gave up, but determined, with what remained to me of strength and consciousness, to dictate a letter to my mother, and one to the dear girl who was more precious to me than all the world beside. I had scarcely finished the one to Mary when the darkness came. The last words I remember to have repeated were: 'Farewell, my precious one! May you and my dear mother try to comfort each other.' Twelve days after, when I began to stagger back into the light again, the first thing that I can distinctly remember is, saying, 'Farewell, Mary!' when the voice of our brave, warm-hearted surgeon cried out, 'Nonsense, man, nonsense! Nonsense!' Somehow he pronounced that word in a way which gave me new hope. When I began to get stronger, I thought I would not write home, but would, if possible, get a furlough, and give them a surprise. My second word, 'nonsense,' brings all this, and much more, back to me in a flood.

'In five weeks I was able to travel, and the furlough was easily obtained-I came home to find that my widowed mother had been taken down at once upon receiving my letter, and that my Mary had come to nurse her. Mother died two weeks before I reached home, and I found Mary in a deep decline. Five days after my return, she joined mother in the better land. Just before she breathed her last, she whispered to me, 'Oh, my darling! if I could have known that you were living, I should not have fallen sick.' I need hardly say that my third word, 'darling,' suggests a train of most painfully-interesting thoughts.

'My fourth word, 'Ripsticks,' was the name by which an old man, with whom I used to go fishing and hunting when I was a boy, always called me. The word brings back many adventures of my early boyhood, and rarely fails to set me thinking.

'Whenever an impure thought entered my mind, I remembered my card at once, and taking it out, never failed to change the subject. It was not a complete victory at once, but now I have no need of the card at all. I have cleaned my soul of nasty thoughts, and can talk with any of my lady friends for an hour without a single sexual impulse. I cannot tell you how clean and manly I feel. I would not go back again for a mine of gold. This 'card trick,' as I call it, is worth infinitely more than any of those with which they win money. I believe that this expedient might help the worst victim of sexual filth into purity and manliness, if he would only try it with a good, strong will.'

"Every person's memory abounds with thrilling incidents which may be recalled by suggestive words. I have before me

at this moment a card which an intelligent young clergyman used with satisfactory results. It contains

AMANDA—NEVER—MOTHER—MINUTE—MERCY.

"All but one of these words were explained to me In regard to the second, he said, in a tremulous voice, that no one but himself and God would ever know of the scene which that word recalled, unless the friend who participated in the tragic event remembered it in another world.

"Another card bears six words:

QUICK-MY GOD-PUSH-FATHER-MARY-PRECISELY.

"I asked the bright young fellow who had used this card to give me the facts or incidents which his six words recalled. He declined, because of two great wrongs in his life which the second and fifth referred to.

"I have asked to see these cards a great many times, and have been struck with the frequency of such words as Mother, Sister, Mary, Katie. Women fill the larger part in the deepest experiences of civilized men.

"Does it not seem curious that when a young man would rid himself of libidinous fancies, he should select from his own experiences some event in which a woman was his companion? And yet it is not strange. Thoughts of mother or sister lift him heavenward more than thoughts of father or brother, just as social contact with mother and sister helps him into pure thoughts more than social contact with father and brother. But, strangely enough, all those who have deeply loved, and lost by death the object of their affections, instinctively recall the lost one in their attempts to shake off the tyranny of lust. And I have been struck, in listening to their recitals, with the reverent, almost prayerful, spirit in which they allude to those loved ones in the other world.

"How sweet and comforting the thought, that while among

the lowest men, and in the lowest moments of good men, it is the sex of body which attracts, in the higher moments it is the sex of soul! This is not only the high and holy, but the permanent, passion. It survives death and time. I know a noble old man of nearly eighty, who has remained alone, living for sixty years on the memory of his Mary. For one short month she was his earthly wife; for more than half a century she has been his heavenly wife."*

There are two other aids to a celibate life which shall be selfrespecting and worthy of admiration, yet to be noticed. The first is a minor one. Among mental conditions, nothing more quickly quiets the unruly excitement, than disgust. The antagonism between this emotion and the reproductive impulse has long been recognized. A fellow student in a New York medical school told the writer that he quieted such excitements, which had given him much trouble, by picturing to himself the dissecting room. "All the help that one excellent clergyman can give to tempted brethren is this: 'Another man is tormented by evil thoughts at night. Let him be directed to cross his arms upon his breast, and extend himself as if he were lying in his coffin. Let him endeavor to think of himself as he will be one day stretched in death. If such solemn thoughts do not drive away evil imaginings, let him rise from his bed and lie on the floor." All this seems rather a weak and pitiful performance for one who has set out to conquer himself. And mention is made of this well-known antagonism as a matter of completeness merely, that nothing may be omitted. I am sure that we may find a more excellent, a more aggressive way, than this makeshift of disgust. Still, "trifling precautions will often prevent great mischiefs."

The one aid still remaining for consideration, is that of confession. The Roman Catholic work already quoted asserts, "It is very useful to disclose unchaste

^{*}Chastity.

temptations to your confessor. St. Philip Neri says that a temptation disclosed is half conquered. And should a person have the misfortune to fall into a sin against purity, let him go to confession immediately. By ordering him, whenever he fell into sin to confess it immediately, St. Philip Neri freed a young man from this sin." While you and I may not approve the priestly confessional, some of us may be so fortunate as to have some friend to whom we can go for aid and counsel in this matter. There is real helpfulness in talking these things over with a wise, sympathetic friend, who will meet us in the proper spirit. For the whole matter has gained a sort of fictitious interest and importance, a false coloring, from the mysterious silence maintained by good people, which excites the curiosity of youth, and leads them to regard the subject as altogether removed from nature's ordinary workings, to the realm of mystery and imagination. To such, a plain matter-of-fact talk with an elder, who is yet in sympathy with the young, is of the greatest benefit. Yet we are so inclined to draw within our shells, and live apart from those immediately around us, letting them catch no hint of our kindly interest, that I fear me the number of young men who feel that they know of no such friend to whom they can go, exceeds the number of those who are sure of sympathetic counsel. But priest or friend is not the only, or the most important, embodiment of the aid of confession. There is one Ear which is always ready to hear us, one Father above who always understands us perfectly. To the believer let me whisper that He made us, and that our confession to Him is to one who knows, precisely, what the conflict is; and that this confession to Him of our weakness and sin is one of the best of defensive armors. To those who do not believe, I commend the utterance of their own leader, O. B. Frothingham: said a moment ago, let scientific investigation go on, by all means. Not only can it do no harm, but I am sure that the further it goes the more clearly will scientific men recognize a

power not yet defined, but distinctly felt by some of the ablest of them. This question has presented itself to me many times in the last few years: What is the power behind these ignorant men who find dignity and comfort in religion ? What is this power? I cannot undertake to say; but it is there, and it may be that those persons who deny the essential truths of revealed religion are all wrong. At any rate, I, for one, do not care to go on denying the existence of such a force." Then I ask them to listen to the assertion of Washington in his Farewell Address-"For three-quarters of men there is no morality without religion." Then I ask them to pour their confessions into the unseen Ear, as a matter of scientific investigation, of psychological experiment, if they must; and making the test in that faithful and scientific spirit which refuses to be warped by preconceived opinion, the result will surprise them.

The plan of organization under which the English universities have their existence, has afforded, by its creation of "fellows," an experiment in nobly-purposed celibacy which is possessed of great interest. The Roman Catholic priesthood is a body so far apart from the world of real life, its members move in an environment, and must fit themselves to a life-contact, so different from that of the mass of humanity, that their celibate vow is without practical value to us as an experiment in celibacy. Besides, it would be impossible to arrive at any conclusion as to the loyalty or merit of lives which are so lived as to be secure from observation. So that in the English schools we find what is really the only systematic experiment in celibacy. Nor is the interest we should feel in this experiment dependent merely upon the absence of like experiments in other quarters. The quality of the men engaged in it, and the intellectual rather than muscular nature of their pursuits, combine to make the test almost an ideal one. The treatise of Dr. Acton contains an opinion on the subject from a married resident at Cam-

bridge, who was formerly a celibate fellow of a large college. It is so full of interest that I insert it here.

"As regards the celibate life of college fellows, many most practical reasons exist in support of that rule. A brief statement must first be made concerning the object of college fellowships. Their object is not, as many imagine, to make a monastic society; still less to perpetuate an order of clergy who take a life-long vow of 'obedience, chastity, and poverty.' The main design of college fellowships is to assist young men who have talents but no money. In electing one of its members a fellow, the college has the aim in view of assisting a man of proved ability to fit himself without interruption for active service of Church or State. Just as a parent would make his son an allowance in order to help him in starting his chosen career, so does the college give a fellowship, to make its best men independent, while they are engaged in work or study leading to an honorable course of life, whatever that course may be. And let it be specially noted that only to men of limited means does the college give this advantage; no one can be elected a fellow if he has already a certain income exceeding five hundred a year; no one can continue a fellow if he afterward become possessed of such a certain income; in that case he vacates his fellowship ipso facto without exception. Again, by the general rule on the subject, no one can hold a fellowship for more than a limited number of years—ten is about the average. By the end of such a time as that it is farely assumed that a man will be ready to make his own good way in the world, without requiring his college to help him. The fellowship was not given the man to make him 'idle and affluent,' but simply in order to secure him the proper leisure for 'working;' to save him the time he would otherwise spend in earning his own bread. As to 'affluence,' the average fellowship never exceeds three hundred a year. In days like these it is but a bare provision, even for a man who has only himself to keep.

reason the college has for strongly dissuading its fellows from marriage. Would any parent advise his son otherwise? If only able to make him an allowance for some ten years, or a little more, would not the parent warn his son on no account to marry until he had secured his position? Would not he urge him to throw his energies, without distraction and without incumbrance, into an earnest preparation for the actual work of life, and to wait, at least, till he is turned of thirty before he thinks of incurring new responsibilities? A young man with private property can please himself in the matter of marrying early: but a young man dependent on others, be those others his parents or be they his college, is not free to please himself, but is bound in moral duty to secure his own independence first before he thinks of marriage.

"So far I have spoken of all fellows of colleges, whether they 'reside' or not; by 'residing' I mean 'living at the university.' Every fellow has the option of doing this if he pleases. Some of the liberal professions, e. g., divinity or physic, can be studied quite or nearly as well at the university as anywhere else; but, in point of fact, few fellows reside unless they have been appointed to hold collegiate office. And this brings us to another reason in favor of college celibacy. One of the objects of fellowships is this: to secure a class of superior men who will give their whole time and interest to the care of the college estates, to the management of the college itself, to the education of the under-graduates, and generally to the fulfilment of all academic duties. Of course a single man is able to do all this without interruption and with undivided energies; whereas a married fellow would be bound to bestow a part of his time on his family, would find his domestic interests often conflicting with his collegiate and academical, would be unable to live within the college walls, which are quite unequal to such an accommodation; in fact, a married fellow would not be a

person of the class which the founders of fellowships wished to keep established. That colleges would ever be managed without such a class of celibates is very doubtful indeed, and some of us would call it impossible.

"A third reason in favor of celibacy is that it somewhat increases the chance of fellowships falling vacant. Of course there are many fellows who marry within ten years of being elected; and if the celibate rule be maintained, fellowships then fall vacant with so much the greater frequency. the more desirable, because there are certain exceptional cases in which the fellowship can be retained beyond the limit of ten years. If a man be holding university office, or college office, or be in orders, he still retains his fellowship although he has passed the limit. The reason is very simple; university office or college office, in point of money, is a mere pittance—no one could hold it without additional income; and the value of the man's college services is fairly considered as a claim on his part to share, as before, in the college revenues, so long as he is actually serving: a non-resident has no such claim. As regards the profession of orders, it is so notoriously poor inpoint of money, that the college is justified in treating fellows in orders on different terms to fellows in other professions. Fellows in orders vacate their fellowships as soon as they succeed to a benefice (from college or any other patronage) exceeding in value a clear three hundred per annum.

"To sum up what I have said in brief: a fellow of a college is forbidden to marry (1) for the sake of his own interests, his own success in his after career; (2) for the sake of the college interests, its good and effective superintendence; (3) for the sake of prospective vacancies by which the helping hand may be stretched to younger men of equal merit.

"And let it be noted most especially that the college does not contemplate a fellow retaining his fellowship above ten years. The 'forbidding to marry' applies, in fact, to men between two-

and-twenty and two-and-thirty. Does any phase of modern society allow young men of this age, dependent on others, to marry? Surely the rule of the colleges is simply the rule of the world. I am speaking only of the upper classes, of course; but the college emphatically puts its fellows in the forefront of the upper classes, and by the marriage rule of that class they would clearly be bound to abide, even if the college itself did not, as it does, enforce the rule upon them.

CELIBACY.

"However, the last University Commission greatly relaxed our rule of celibacy. Under the statute of 1858 all fellows of colleges who hold university office can marry now without vacating their fellowships. The number of university offices is somewhere between thirty and forty; all of them (except the divinity professorships) are open to laymen as well as to clergymen. Here is one avenue (not, it must be owned, an easy one) for the college fellow whose aims are matrimonial. But that is only the slightest part of the change; out of our fifteen colleges there are now no less than eight whose statutes allow of the fellows marrying; allows them with some restrictions, it is true, but with no conditions which fair perseverance and fair ability cannot achieve. These eight colleges contain in all about 135 fellows. The total number of fellowships at Cambridge is nearly 290.

"It is, therefore, tolerably plain, as far as Cambridge is concerned, that the old rule of celibacy has become a thing of the past, or at least it is so far tempered by modern changes and chances that no one now could esteem it 'a yoke too grievous to bear.' At Cambridge, no doubt, as elsewhere, 'persons intending to marry' must wait till time, position, and income all concur to endorse their intention. But looking on college office and college work as a profession, it cannot be denied that now it offers the same facilities for marriage as any other.

"Though I am one of the many who profit in some degree by these and the like alterations, I still retain my conviction

that the old arrangement was best. Of this, at least, I am certain, that for college government a certain number of celibate fellows are indispensible. If all the college officers were married and living out of college, discipline among the undergraduates could not be at all maintained, and personal influence, close association, would all but cease to exist. Each college is at present a religious house, with the very highest standard of morality, and quite unrivaled facilities of education. And the real management of every college depends on the body of celibates who live within the walls and devote themselves to the work. Every change which, in any degree, diminishes the number of such collegiate authorities cannot but be more or less injurious to all our university system.

"I do not for a moment deny that celibate life involves a great self-sacrifice; but so does every human career which has high and noble aims. Surely the universities, like every other sphere in the country, will never fall short of men enough to fill up their posts of duty-posts which none but a celibate is really qualified to fill. There are always men in England (and an ample supply of such men) who have strength enough to forego the indulgence of physical and sentimental passion, when they know that by such self-denial only can their work be properly carried out. Nor do such men regard themselves, nor can we regard them as martyrs. College celibacy, at least, is anything but a martyrdom; to some well balanced constitutions it is not a sacrifice at all, but purely a matter of preference. are the men who persevere in retaining their fellowships twenty or thirty years, doing an immensity of good to their college and university, and growing ripe in years and labors till higher preferment calls them away. It is to this celibate body of fellows that Oxford and Cambridge owe their immense success, their influence which century by century has grown yet wider and wider, till now there is not an educated class in the whole of England which does not feel their effect; but unless succeeding

generations produce at least the present supply of men who have courage and self-denial to maintain the celibate rule, Oxford and Cambridge will cease to be what they are.

"Assuming, then, as a matter of fact, the advantages of collegiate celibacy, we have to consider its obvious drawbacks—the supposed temptations of single life—the supposed deterioration of character in any man who remains for long unmarried. If these objections are founded on truth, we may, of course, expect to find a fruit corresponding to the seed, i. e., a low moral standard produced by that (so-called) unnatural restriction. Speaking from fifteen years' experience, I must pronounce that the moral standard professed by our resident body is most exceptionally high. Offenses which the world considers venial are here regarded as penal; they are punished by removal from office and withdrawal of permission to 'reside.' In my own time two such cases have occurred. Not only was the sentence carried out, but all academic opinion endorsed it; that opinion, though lenient enough to the undergraduate offender, is always. inflexible against the delinquent who ranks in the governing body. As another test of university moral feeling, I venture to compare it with what I hear from persons in other places, and members of other communities. I have rarely heard a celibate fellow complain that he suffered in health from celibacy; I have never heard a celibate fellow maintain that it was a physical necessity to gratify sexual desire. I have heard both these statements often made in London and on the Continent-made by men who were no way bound to be celibate, men whom nothing prevented from marriage except the lack of sufficient income. And in every case, as it seemed to me, their statement was a confession not of human nature, but simply of human weakness; not derived from the promptings of instinct and passion within, but from the unworthy tone and example of friends and society without. I have come at length to believe that the drawbacks of collegiate celibacy are very much overstated. Indeed

I venture to go further, and to say that at the universities themselves, these drawbacks, if they exist at all, exist in no perceptible degree.

"This is partly due to the fact that the life of a college fellow is intensely active and laborious. The real work of academic life begins only when the fellowship has been won. It would be difficult to find anywhere a body of men more constantly employed than the academic fellows, more versatile, more inquiring, more practical and energetic. For is there any class in England who receive so insignificant a payment for constant and serious exertion. Their healthful and regular employment which is scarcely ever sedentary, confers, however, its own reward; they have no time for self-indulgence, except in one good item, the practice of hospitality. It is a positive fact of any fellow at Cambridge that he is generally to be found in one or other of three distinct positions, either working his brain or else working his muscles, or else as a host or guest at table; all his amusements and recreations are of a vigorous 'gregarious' kind. Every one knows what a marked effect solitude stamps on any constitution; solitude at Oxford or Cambridge is the rarest of all conditions.

"Another fact which makes it easy to combine morality and celibacy is that, at either university, the men who remain as celibates are men of exceptional power, with nerve enough to be continent, with knowledge enough of life to know the value of such a regimen. Men with stronger animal and weaker moral nature rarely remain in a sphere like this, for which they feel unfitted; they make their way elsewhere, and soon vacate their fellowships; the problem solves itself, and the college gains by the solution. Celibacy serves as a wholesome test; it keeps for college service the best and the strongest mind, excludes from college service the weaker, more sensual creature.

"If this conception of university life should seem to be formed on too exalted a scale, let readers remember that, as I

have stated, the conception no longer is carried out to its full original extent.

"Marriage is now a recognized thing in the system of college fellowships. Men who do not feel themselves equal to giving their college an entire devotion, can now combine its service with the duties and comforts of married life. But the real fellows on whom immediately the college depends for its welfare, are still the celibate fellows residing within the walls. It is still to the self-denying celibate, and not to the man of marriage ties, that the university owes the best and the hardest part of college work. We may still affirm, and the facts still bear us out in affirming that celibacy can be well maintained in a highly educated class, that its maintenance gives immense advantage, and is quite consistent with the highest standard of practical genuine morality.

"Let me, in conclusion, briefly state that the continence, which is an essential part of college life in its truest form, requires, no doubt, a peculiar caution in the choice of habits and amusements. Mr. Acton's advice as regards exercise and diet is invaluable, and the greater extreme to which that system can be carried, without injuring the health, so much the better. A man should go into training for a conflict with his appetites just as keenly as he does for the university eight, the only difference being that the training will be more beneficial and more protracted. Besides diet and exercise, let him be constantly employed; in fact, let him have so many metaphorical 'irons in the fire' that he will find it difficult to snatch ten minutes for private meditation; let his sleep be very limited and the temperature he moves in as nearly cold as he can bear; let neither his eye nor his ear be voluntarily open to anything that could possibly excite the passions; if he see or hear accidentally what might have this tendency, let him at once resort to muscular exercise, and keep it up till he is quite fatigued; whenever any sensual image occurs involuntarily to his mind, let him fly to the same resource, or else to the company of friends. Lastly, I would fain add what Mr. Acton, looking expressly at the physical question, has of course passed over: let the sufferer from sexual causes make his affliction the subject of most earnest prayer at any and all times to that Ear where no supplication is made in vain. Thus armed, he will keep his assailant at bay; the conquest is not impossible, although the struggle may sometimes be a severe one."

There is something very pleasing about this manly utterance of an English scholar. In this as in all else, the discovery of the universal brotherhood of mankind is inspiring, and this clarion note from across the water, bearing testimony that the battle of life is everywhere the same, and that everywhere victory awaits the faithful soldier, should give courage to the faint-hearted and ambition to the spiritless. We have seen that no fear of physical disability, or of mental inferiority, need inspire with dread the celibate. The familiar lines,

"The heights by great men reached and kept
Were not attained by sudden flight,
But they, while their companions slept,
Were toiling upward in the night."

are as truly the property of the single man, as of the married. Those who, while living single lives, see to it that their energies are engrossed in worthy effort, their heads kept full of high purpose, their hearts encouraged to grow larger and tenderer, may smile at those who croak of "a wasted being, and an unfulfilled destiny." The purposeful celibate need not be apprehensive of an inconsequential life. Even the possession of a warm human sympathy is independent of this condition. Married or single,

"How far the gulf-stream of our youth may flow Into the arctic regions of our lives,"

each may, and must, determine for himself. We are so truly the arbiters of our own destinies that no pressure of surround-

ing circumstance can wrest from us the authority which we exercise over our own fate. Free from the dictation of outward surroundings, we decide, each for himself, whether it shall be, for us, growth or shriveling. Single and alone, we may yet fit ourselves for that larger life which is to follow this; and with a redeemed manhood enter into the silent land. If fought in knightly spirit, the daily conflicts of our commonplace life are filling with joy the expectant years of that immortality which awaits our coming.

"There is no end to the sky
And the stars are everywhere
And time is eternity,
And the here is over there.

For the common deeds of the common day
Are ringing bells in the far-away."

CHAPTER VII.

MARRIAGE.

It is with hesitancy that I write at the head of this page the title of the chapter. It is the evening of our national Thanksgiving festival, and to-day the noble band of sons and daughters, of chidren and grandchildren, have gathered at the old home, and around the home table. How long that table has to be that there may be room for every one-for it wouldn't seem like Thanksgiving at all if anybody had to wait. At the head of the table, with his silvery crown of whitened hair, sits the one whom the larger children call father, but the smaller children call him grandpa. And when all are seated there comes a hush -the little ones are all very quiet, wondering why their papas and mammas are so very still indeed, while the patriarch at the head of the table rises to his feet, and with outstretched hands, and uplifted face, and tremulous voice, gives thanks for all the way in which they have been lead in the years that are past, and asks the blessing for to-day which seems to descend and fill the room while he is still speaking. It is a day of days, this high feastday of the family reunion. And now on the evening of such a day as this, whose sacred hours have brought to us a new revelation of the honor and dignity and joy of marriage and the family, what combination of words in its praise can do aught but belittle? We have seen and felt to-day what no vocabulary can express, no language clothe. We understand to-day what Tholuck meant when he said that "the family was God's first Church," and Jeremy Taylor as he asserts that marriage is "the mother of the world, and preserves kingdoms, and fills cities, churches,

and even heaven itself." To attack it with the rude forms of speech seems like the taking of a jewel in a soiled hand. Yet the words of Professor Huxley sound in my ears: "We live in a world which is full of misery and ignorance, and the plain duty of each and all of us is to try to make the little corner he can influence somewhat less miserable and somwhat less ignorant than it was before he entered it." There is ignorance, which brings its accompaniment of misery, in regard to marriage and the family; and while it may be a thankless task to dissect a poem, an ungracious labor to analyze a sacrament, yet the poem is so truly such that dissection cannot destroy it, and the sacrament is so sacred that analysis cannot profane it. As reverent learners, then, we enter upon our study, and may the lustre of the day reflect its hallowed light upon our research.

It is beyond the bounds of possibility, to do more than consider some of the things which belong to marriage. Marriage itself as a complete and undivided whole, is beyond our grasp and greater than our conception. Most important of all the influences which mould men, the very warp and woof of the social fabric, no one has yet been able to write of it in its entirety that human limitations did not write weakness across the face of every page. The human mind can no more contain and unravel marriage, than it can contain and unravel the plan and purpose of that universe which is above and beneath and around it, and of which our own solar system is but an insignificant fragment. The great First Cause finds fitting and constant symbol in the family-in fatherhood and motherhood and childhood-when He would reveal Himself to the faltering understanding of man. The illimitable universe is His world-system. The unfathomable family is His soul-system. To attempt the complete understanding of either is to try to crowd the infinite into the finite.

But it is both our duty and our privilege to feel after the infinite. Because we cannot know the whole, is no reason for neglecting the stars. Night unto night showeth forth knowledge.

To grow toward the infinite is to live with a purpose. Though husband and wife be words of more meaning than we can lay hold of; though fatherhood be greater, and motherhood be deeper than our poor comprehension, we may yet learn something about the family. It is wholly within our possibilities to know some things about marriage which will help us, in our own personal experience of it, to reap the rich harvest of gladness which all right marriages bring with them.

The estimate placed upon marriage, in the abstract so considered, has run through all the variations between that of chattelism on the one side, as in the commercial sale of heathendom, and that of sanctity on the other, as in the sacrament of the Roman Catholic church. In law, which takes cognizance only of the relations of individuals to each other, marriage is a contract. The doctrine of the common law is that a contract is sufficient to constitute marriage, without any official ceremony; and such is the law in some of our states. But after all, even the law cannot make marriage a mere contract. For it must be for life, it cannot be made and unmade at pleasure, and the contract between the two renders them incompetent to make a like contract with other persons. So the law is under the necessity of recognizing in marriage, not a contract merely, but an institution as well. And as this institution is indispensable to the good order of society and the welfare of the State, it is always the policy of the State to make marriage, not difficult, but easy; so that it is not always easy to say what, in the eye of the law, is sufficient to constitute marriage, the courts having sustained very informal agreements of this kind, when shown to have been in good faith. "Marriage," says an English judge, "as understood in Christendom, may be defined as the voluntary union, for life, of one man and one woman, to the exclusion of all others."

But whatever attitude the law may find it necessary to assume toward marriage in the exercise of its proper function, i. e., the

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preservation of equity between individuals, it goes without saying that this voluntary life-union is, to all the sincere-hearted, a sacrament of the sacraments; that it has its root deep in the universal order of things, reaching back into the infinite design farther than we can hope to follow it.

"Atom loved atom ages gone, and so The worlds were born!"

The need of man and woman for each other, is only the human form of a universal need, the human expression of an omnipresent law. "Polarity, or action and reaction, we meet in every part of nature; in darkness and light; in heat and cold; in the ebb and flow of waters; in male and female; in the inspiration and expiration of plants and animals; in the equation of quantity and quality in the fluids of the animal body; in the systole and diastole of the heart; in the undulations of fluids and of sound; in the centrifugal and centripetal gravity; in electricity, galvanism, and chemical affinity. Superinduce magnetism at one end of a needle, the opposite magnetism takes place at the other end. If the south attracts, the north repels. To empty here, you must condense there. An inevitable dualism bisects nature, so that each thing is a half, and suggests another thing to make it whole; as, spirit, matter; man, woman; odd, even; subjective, objective; in, out; upper, under; motion, rest; yea, nay." * But however profound and far-reaching may be the principle which, when applied to the human race, takes two individuals and gives us the unit of society, it is not with the abstract philosophy of marriage that we are chiefly concerned, but rather with the practical philosophy of every-day life in the family, as it must be lived from day to day, just as plain folk, such as you and I, must live it, if we live it at all. What does the sage of Concord say about it when the abstract is clothed upon with the garb of a living, breathing, feeling humanity? This. "A private and tender relation of

^{*} Emerson.

one to one, which is the enchantment of human life; which, like a certain divine rage and enthusiasm, seizes on man at one period and works a revolution in his mind and body; unites him to his race, pledges him to the domestic and civic relations, carries him with new sympathy into nature, enhances the power of the senses, opens the imagination, adds to his character heroic and sacred attributes, establishes marriage and gives permanence to human society."

Notice that the subtle mind of him who wrote these words is impressed with the "revolution" which marriage, and the sitting as a learner at the feet of Love which marriage implies, sets up within a man, increasing his power and value in every direction. One need not be a savant in order to perceive this marriage-brought endowment. We are constantly seeing it bestowed upon our friends. Are not the boys and girls of our acquaintance making, one after another, better husbands and wives than we had any idea that they could make? Much better, even, than their own love-blind fathers and mothers had hoped ? If, then, we find as the result such a noble expanding of character, it can but be that a young man is doing something very noble when falling in love. We are all fond of a joke, and if we can have a laugh by pointing our joke at him upon whose altar the flame of love has just been kindled, we do not hesitate to indulge it. Doubtless it is all right that we should have our laugh. But we must look to it that we do not carry our fun so far that we see in this divine awakening nothing but a cause for laughter. He who gives glad and tender greeting to the new soul that takes possession of him when love is born into his heart, is doing a knightly deed. His courage is beyond the power of earth to conquer. All the imperfections and follies and sins of the great human family cannot make of him the heart-coward who strangles all that is best in himself because he so often sees that which is bad in others. absence of this power of loving is a mark of immaturity, of

greenness, and clownishness of the heart." There is no phrase oftener on the lips of those who hold to widely divergent creeds of ethics than, "The proper study of mankind is man;" and no one can hope to excel in that study who is separated from the mass of humanity; no one can understand the great human family, or reach the measure of greatness of the human heart, who holds himself aloof from the loves which sway the life of mankind. Says Theodore Parker; "The affections deal with persons; with nothing but persons, for animate, and even inanimate, things get invested with a certain imaginary personality as soon as they become objects of affection. Ideas are the persons of the intellect, and persons the ideas of the heart. Persons are the central point of the affectional world. love of persons is the function of the affections, as it is that of the mind and conscience to discover and accept truth and right. Love is the piety of the affections. shall tell me that intellectual or moral grandeur is higher in the scale of powers than the heart! It is not so. Mind and conscience are great and noble; truth and justice are exceeding dear, but love is dearer than both. * It is more fatal to * neglect the heart than the head."

When, in the material world, we pursue electricity into motion, and drive motion into heat, and chase heat into light, we recognize the fact that these are but different manifestations of the same energy, and we include all under the single word, force. Turning from the external world to the great human family, if we will follow the beatings of the human spirit from the hearth-stone to the battle-field, through science and literature and art and religion, we shall find that all noble energies are but transmutations of the one central and all-inclusive power we call love. And by as much as mind is greater than matter, by just so much is love grander than Niagara, more boundless than the sea. And as the unseen entrance of the steam into the heart of the ponderous and inert engine brings power to its arms and purpose

to its being, so the invisible budding of love in the young heart puts meaning into life, and crowns endeavor with potency.

"Through the rude chaos thus the running light
Shot the first ray that pierced the native night:
So reason in his brutal soul began;
Love made him first suspect he was a Man;
Love made him doubt his broad barbarian sound;
By Love his want of words and wit he found:
That sense of want prepared the future way
To knowledge, and disclosed the promise of a day.
What not his father's care nor tutor's art
Could plant with pains in his untutored heart,
That best instructor, Love, at once inspired,
As barren grounds to fruitfulness are fired:
Love taught him shame, and shame with Love at strife,
Soon taught the sweet civilities of life."

"A century since in the north of Europe stood an old cathedral, upon one of the arches of which was a sculptured face of wondrous beauty. It was long hidden, until one day the sun's light striking through a slanted window revealed its matchless features. And ever after, year by year, upon the days when for a brief hour it was thus illumined, crowds came and waited eagerly to catch but a glimpse of that face. It had a strange history. When the cathedral was being built, an old man, broken with the weight of years and care, came and besought the architect to let him work upon it. Out of pity for his age, but fearful lest his failing sight and trembling touch might mar some fair design, the master set him to work in the shadows of the vaulted roof. One day they found the old man asleep in death, the tools of his craft laid in order beside him, the cunning of his right hand gone, his face upturned to this other marvellous face, which he had wrought there—the face of one whom he had loved and lost in his early manhood. And when the artists and sculptors and workmen from all parts of the cathedral came and looked upon that face they said, 'This is the grandest work of all; love wrought this.""

Ah, what wonderful privileges come to each and all of us with this awakening! Did you ever stop and think of it? Does it sometimes seem to you that your lines have not fallen in pleasant places, that yours is not a goodly heritage? Have you at times spent happy hours in homes which seemed even more favored than your own, and have you had a saddened feeling, in which there has been no taint of treason toward your own household, but which has come unbidden and in spite of your repulsion, that the atmosphere of your own home was not quite that atmosphere which would inspire you to the best things of which you were capable? That the members of your own home circle were not quite those who could best stimulate and awaken the best that was in you, which so much needed stimulation and awakening? That they did not understand you very well, and that you were being dwarfed and deformed by being misunderstood? Then let me say to you that you need not waste one poor, solitary regret upon these, as they seem to you, unfortunate surroundings. Two willing hands, and a real adhesiveness of purpose are all that is necessary to the earning of such a livelihood that you may set up a home of your own. Only think of it! You who have so much wanted some one to whom you could tell everything, and who would always understand you perfectly; you who have so sadly yearned for some one who should be more to you than the word "friend" could begin to describe; who should be ever with you, strong when you were weak, ever seconding your best impulses, strengthening your noblest purposes; you who have felt all this so longingly, so wistfully, that it has become the pathos of your life-to you it is given to choose from all the world the only one in all the world who could be just this one, and win her for your wife. From all the world? No, that was hastily written. For

> "Not from the whole wide world I chose thee, Sweetheart, light of the land and sea! The wide, wide world could not inclose thee, For thou art the whole wide world to me."

What monarch ever dreamed of prerogative so kingly, what high-priest's visionings ever mounted to a privilege so sacred? And now your new-found honors crowd thick upon you. You have always had a wholesome contempt for sentimentality—now are you welcomed as a guest in the illumined halls of sentiment. You have always felt an amused compassion for those weak enough to be "struck"—now are you clothed upon with the royal purple of the manliest love. You have always been a knight-errant—now you receive the cross of the Legion of Honor, as to you is committed the care and guardianship of the rarest of earth-imprisoned lives. You have felt that no opportunity has ever been given you to show of what mettle you were really made—now is placed in your hands the greatest trust of which the world knows, without hint of bond or surety.

Nothing so develops the stalwart manhood of the real man, as the faithful discharge of great trusts. With what a trust are you honored! She is the consummate flower of the household. her that household has planned and toiled and prayed. For her no care has been thought too exacting, no anxiety too wearing, no expense too lavish, no sacrifice too great, no love large enough. How has she been guarded against any blast from the outside world! How carefully her steps directed in all her goings and comings! Past all speech is the trust wherewith that father and mother trust you as she accepts your invitation and the front door closes behind you, and you are off together for an evening. They know full well that youth meets with hot scorn those little conventionalities and proprieties which maturer years have taught them are, after all, best observed in a world where the millennium has not yet come. They know that night is the great loosener of restraints for older people, and for younger people too. They know that what you would consider a harmless frolic, an innocent escapade to night, which it would be the sheerest prudery to consider in the least objectionable, you would yourself at fifty think unwise for your own

children. They know all this, and knowing, they trust you. The father knows that the delineation of human passion upon the stage is somewhat intoxicating to young heads and hearts, as well as to old ones, yet he greets you very kindly as you come to take her, who is the very light of his eyes, with you to the theater, for Barrett plays Othello to-night. He trusts you. The mother is so afraid of horses that she never gets into a carriage without fearing that some accident will happen. Yet she does not cloud your enjoyment by a single glance of foreboding as you lead out to the gate that daughter who is more to her than her own life, and in a light buggy behind a spirited team drive gaily out into the night. As the swift clatter of the hoofsdies out in the distance she may send a prayer after you, for she knows that all care for the nervy horses is apt to be forgotten in thought of the one who sits beside you, but she did not spoil your pleasure by any anxious glance. She trusts you.

So the days go by. Are you winning her? You cannot answer. All you know is that you have not known yourself since

"Love took up the harp of Life, and smote on all the chords with might; Smote the chord of Self; that, trembling, passed in music out of sight."

Is she winning you? You have never suspected anything of the sort. But I suspect some friend of yours may be saying,—

"Without his knowledge he was won,
Against his nature kept devout;
She'll never tell him how 'twas done,
And he will never find it out.
If, sudden, he suspects her wiles,
And hears her forging chain and trap,
And looks; she sits in simple smiles,
Her two hands lying in her lap!"

You only know, and care only to know, that a new inspiration has taken hold of your life—has given that life a new meaning.

Days pass on into weeks and weeks into months, and there is a subdued stir of preparation in the household; for on the

morrow the household treasure is to become your crown jewel "of purest ray serene." You sit together under the open sky that evening. I would not for the world hear what you are saying to each other. None but yourselves ought to hear. But she is saying something like this, I know she is:—

"If there be any one can take my place
And make you happy whom I grieve to grieve,
Think not that I can grudge it, but believe
I do commend you to that nobler grace,
That readier wit than mine, that sweeter face;
Yea, since your riches make me rich, conceive
I too am crowned, while bridal crowns I weave,
And thread the bridal dance with jocund pace.
For if I did not love you, it might be
That I should grudge you some one dear delight;
But since the heart is yours that was mine own,
Your pleasure is my pleasure, right my right,
Your honorable freedom makes me free,
And you companioned I am not alone."

You need not tell me whether she is saying anything like this or not, because I have no right to be told, and I am sure that I know without telling, and that you understand as never before that perfect love and perfect sacrifice go ever hand-in-hand. And as you stride down the walk, after the last reluctant goodnight, it is with the consciousness of a larger manhood, for

"Love kissed by wisdom wakes twice love, And wisdom is through loving wise;"

and I hear you saying to yourself,

"O, the years I lost before I knew you, love!
O, the hills I climbed and came not to you love!
Ah, who shall render unto us, to make us glad,
The things which for and of each other's sake we might have had!"

To-morrow night has come. You feel a strange indifference for the brilliant company which crowds the parlors. You have room for but one to-night. Her mother is crying softly as with a mother's infinite tenderness she puts the finishing touches of

arrangement upon the dress of that daughter whom a few short minutes shall make your bride. Be not impatient with her because the tears which were unbidden refuse to stay away. They mean no distrust of you. It is the vision of the untried pathway before those tender feet. It cannot all be joy, and surely it cannot be all sorrow; but the sum of human joy and human sorrow will ever find crystal setting in human tears until that great day when our Father who is in heaven shall wipe away all tears from our eyes.

But there is a hum of expectancy, a taking up of positions, which you hardly realize till you are standing with her before the man of God. His calm, solemn words sound clearly upon the silence,—"Appealing to your Father who is in heaven to witness your sincerity, you do now take this woman whose hand you hold—choosing her alone from all the world—to be your lawfully wedded wife. You trust her as your best earthly friend. You promise to love, to cherish, and to protect her; to be considerate of her happiness in your plans of life; to cultivate for her sake all manly virtues; and in all things to seek her welfare as you seek your own. You pledge yourself thus honorably to her, to be her husband in good faith, so long as the providence of God shall spare you to each other."

"In like manner, looking to your Heavenly Father for his blessing, you do now receive this man whose hand you hold, to be your lawfully wedded husband. You choose him from all the world as he has chosen you. You pledge your trust to him as your best earthly friend. You promise to love, to comfort, and to honor him; to cultivate for his sake all womanly graces; to guard his reputation, and assist him in his life's work; and in all things to esteem his happiness as your own. You give yourself thus trustfully to him, to be his wife in good faith, so long as the providence of God shall spare you to each other."

^{*}Quoted by Miss Phelps in "Men, Women and Ghosts."

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The covenant is sealed, the word is pronounced, the sacrament is complete. How passing fair is she, beneath her crown of orange blossoms. With a great trust have the father and mother trusted you. But she who has placed her life in your keeping-what shall we say of a trust that is measureless, that is infinite? What greater honor has this world to confer upon any man than is awarded to you in the bestowment of this imperial trust? As you think of these things you resolve over and over again that the trust shall be held most sacred, that you will guard her tenderly from life's tempests, that no harm shall come nigh her while your arm retains its strength and vour heart does not cease to beat. You look forward into the coming weeks, and remember that every single individual day those weeks contain, shall bring with it your inalienable right to each other for all its hours; a blissful right recurring with each dawn, renewed by every sunset. "It is altogether a different existence by the side of a dear wife, from such a desolate and lonely one as mine was even in sum-Now for the first time I wholly enjoy fair nature, and live in it. Things about me again array themselves in poetic forms. What a beautiful life I lead now! My existence has gained a harmonious continuity; not passionately excited, but clearly and calmly my days flow on. A few years more, and I shall live in the full enjoyment of my mind-nay, I hope to return to my youth; an inward spring of poetic life will restore it to me." †

It seems almost too good to be true, that all this should really be for you, and you draw her arm yet more closely through your own that you may assure yourself that there is no mistake about it all. She looks up to you and smiles, and you are satisfied; and while your inner self is filled with thoughts like these, your outer self has moved mechanically through the formalities of the reception, till now the company has dispersed, and the car-

⁺ Schiller.

riage is waiting to take you to the train. Many things have come to you by intuition in the past few hours, which you had not known before, and you are confident that you understand life's pathways, and need no counsel from any one, nor would you brook a cold discussion of that which is revealing itself to you through a hallowed experience.

I am glad that you would not. I should have a poor opinion of the man who would. But two of your old-time chums, who were here to-night, may now be seen sitting in their bachelor room, with coats and boots off, in easy rather than elegant posture, discussing the question, with sapient coolness, whether, after all, you are to be congratulated upon the evening's consummation which they have witnessed. They set you down as a capital · fellow, and very much in love of course; but they shake their heads sagely and agree that you will find that you are not now so free to come and go when and where you please; that you have assumed additional care, fresh obligations and increased expense; that they are not sure, by any means, that the play is worth the candle; they are inclined to think on the whole that they would not change places with you; and that their superior and calmer judgment will suffice to keep them from a like boyish devotion to any woman. In fact, it is more than probable that by the time the wedding trip is over, and you have settled down to real life for a few months, and had the veil of fancy torn away by the inexorable hand of reality, you will come around to pretty much their way of thinking. It is all very nice and romantic to fall in love, but as we can't always stay up in the clouds, and as common, every-day life isn't at all romantic, but distressingly matter-of-fact, it stands to reason that to fall in love is one thing, but to stay in love is quite another, if not an impossible thing. So while you do not want me to talk to you, you are quite willing, I am sure, that I should talk with these friends of yours.

There are several things that I wish to say to them. I

wish to point out to them that their line of argument partakes more of the nature of special pleading than of an impartial judicial consideration of the case upon its real merits. What they say reminds me of what was once said to the greatest teacher the world ever saw. When He told His little circle of learners who had put themselves under his especial teaching, that the old ideas of marriage were unworthy, and that men must not put away their wives merely to gratify a whim, it seemed to them so irksome a restraint that they petulantly exclaimed, "If the case of the man is so with his wife, it is not expedient to marry." And their impatience was met with the simple words, "All men cannot receive this saying, but they to whom it is given." It is so with these chums of yours. Your education of the past few months at the hand of that teacher whose magic touch unlocks the doors which bar the way to unsuspected wealth of head and heart, has put a wide gulf between yourself and them. What comes to you as an intuition, is to them a hard saving. When Jane Eyre is made to say of herself and her husband, "To be together, for us, is to be as free as in solitude—as gay as in company," you do not stumble at the saying; to them it is devoid of sense.

When it is asserted that the married man is not so free to come and go, geographically, as before, by reason of his added cares, obligations and expenses, that is stated which may be literally true. But it is assumed that these new duties bring with them no adequate compensation—and this is not true. Would you be a South Sea Islander rather than President of the United States, because the Islander has no social obligations whatever, while the President can hardly know a moment's freedom from their remorseless pressure? The comparison is not overdrawn. The darkened heart of the Islander would find nothing but discontent in the actual performance of presidential duties. He would yearn for the free, untram-

melled wilds of the savage life. And these chums think they would do the same were they married. And the reason that they can be taught the better way so much more easily than the Islander, is because the dawn of love in their hearts, can lift them up to a larger life as the rising sun lifts the world out of darkness into day. Who, then, would be a boy going a-fishing, rather than the commander of armies, because the boy has not a particle of responsibility resting upon his shoulders, while the commander is well nigh crushed by its weight? "Better fifty years of Europe than a cycle of Cathay." All testimony of married people is unequivocally in favor of the dual life; save, perchance, some solitary voice from one who has abused its high estate. Truly might it be sung of husbands and wives as it has been sung of the bumble-bee;

"Seeing only what is fair,
Sipping only what is sweet,
Thou dost mock at fate and care,
Leave the chaff and take the wheat."

Let the added cares of married life come in fullest force, "all other pleasures are not worth its pains," and the broadening shoulders of a larger manhood, the stouter heart of a companioned life, are ignorant of any increase in life's burdens. Then, too, by the most unsuspected object teaching, are we learning the most difficult of life's lessons. When some reverend teacher insists that all selfishness is unhappiness, and that happiness is found always and only in self-sacrifice, we shrug our shoulders and say all that is excellent as moral philosophy. but we beg to be excused from practicing it. Yet before we are aware, a new and strange something has taken possession of us, and we are not happy save when showing our love by our forgetfulness of self; and the more that forgetfulness shines out in our action the better are we satisfied, the happier are we -and all unconsciously have we demonstrated the moral philosophy to be the practical philosophy of life as well. "What

do we live for, if it is not to make life less difficult to each other?" Does it not pay? And in spite of all newly incurred obligations, is not the wife, after all,

"The guardian angel o'er his life presiding,
Each pleasure doubling and each care dividing?"

Let us then shake off our old selves, made miserable through the narrowness of selfishness, and welcome that forgetfulness of self which ushers in a broadening happiness that is without bound, a deepening joy unfathomable. "Life," writes Horace Greeley, "is a bubble which any breath may dissolve; wealth or power a snowflake, melting momently into the treacherous deep across whose waves we are floated on to our unseen destiny; but to have lived so that one less orphan shall be called to choose between starvation and infamy, to have lived so that some eyes of those whom Fame shall never know are brightened, and others suffused at the name of the beloved one,—so that the few who knew him truly shall recognize him as a bright, warm, cheering presence, which was here for a season and left the world no worse for his stay in it,—this, surely, is to have really lived,—and not wholly in vain."

Again, our friends have raised two other points of which I would speak. The first finds expression in the remark about being superior to any such boyish devotion to any woman. Devotion is inseparable from its object. It is strong or weak, noble or ignoble, manly or base, only as its object is worthy or unworthy. Devotion to great truths, to right principles, to the public good, has always been esteemed the highest development of manly character. So to sneer at the devotion of the married man to his wife is not to question devotion, but woman. In what particular is she unworthy of your true and manly devotion? Do you think her inferior to yourself in intellectual strength? The reports from the university examinations fail to support your opinion. "The London University honor lists, which have just been published, show that the young

women who were examined took a remarkable place. The class taking examination for mathematical honors had three members, one being a girl, and the girl beat both her male competitors. The first in the English honors list for the preliminary B. A. examination was a young woman, and in the German honors list two of the first class, consisting of only four, were also girls. The first in the honors list for anatomy in the preliminary bachelor of medicine examination was a girl-Miss Prideaux, of the London School of Medicine for Women-who had beaten both her Guy's Hospital rivals. Another girl was one of three students placed in the first class of the honors list for materia medica and pharmaceutical chemistry." * Again, we are told that Miss Helen Taylor, the stepdaughter of John Stuart Mill, is "a woman who holds an aristocratic audience spellbound in a duke's drawing-room, when speaking on the dignity of labor; a woman who commands the breathless attention of 3,000 or 4,000 workingmen, when expounding the moral obligations of capital." Please tell us just how far below your own are these intellectual achievements?

Do you think her inferior to yourself in ability to bear a hand in what is ordinarily considered as going to make up the world's work? There is no more honorable field of activity among all the vocations of which the world has ever heard, or to which it has turned its hand, than the building of a home. It is a pleasure, when making examination for life-insurance, and the applicant chances to be a woman, to set over against "Occupation," the grandest work of the world, "Home-keeper." How bare and forlorn do such words as "Dressmaker," "Music Teacher," "Stenographer," look beside it. But our bachelor friends cannot appreciate this. They think of the world's work as being something entirely outside of, perhaps in a measure the antithesis of, the home.

Very well. If they will understand it better, we shall not be

^{*} New York Independent.

in any way embarrassed by taking up our position on their own ground. There comes before me a vision of clanking looms and swift-plying shuttles, superintended by an army of nimble-fingered girls, in the great cotton factories of New England. Woman is not unequal, it seems, to the making of those things which the world needs, if you do not ask that her time and strength be given to the making of a wife. The vision changes, and I see Caroline Herschel by the side of her no greater brother, as they keep nightly vigil with the everlasting stars, working out for him the laborious mathematical calculations, and jealously hiding her own discoveries, that the fame of this brother may be the greater. Woman is not unequal, it seems, to the deepest science, if you do not ask that her time and strength be given to the shedding of that sunlight, moonlight, starlight which makes home and wife the universe of the heart. The vision changes, and where billow is piled on billow, between the contending lines where sea and sky make onslaught one upon the other with mighty shock, I see a fragile boat held to its purpose by the fearless heart of Grace Darling. Woman is not unequal, it seems, to the giving of battle to the tempest when all the winds of heaven are unloosed, if you do not ask that her time and strength be given to the making of a wifely harbor for your storm-tossed heart, where wind and waves are still, and golden sands and flower-embowered banks seem almost to belong to the celestial shores. The vision changes, and I see an untutored peasant girl of eighteen years, leading a veteran army of men to victory. The hot breath of battle blows fiercely against the fair cheek of dawning womanhood, paled with the excitement of the fray, but there is not a moment's hesitancy, nor slightest tremor. She turns her pale, inspired face toward me as she issues a command, and I see that it is Joan of Arc, the Maid of Orleans. Woman is not unequal, it seems, to the bearing of all the terrors and buffetings of war, if you do not ask that her time and strength be given to the daring of pain and death

upon the heights of motherhood. The vision changes, and I see the fair form of a woman going down into that Crimean slaughter-pen, unlocking the stupidly-imprisoned hospital supplies, and caring for the dead, comforting the dying, and winning the wounded back to life. Woman is not unequal, it seems, to broad humanitarian enterprises, if you do not ask that her time and strength be given to the living of the life of the wife who heals all hurts, and takes the sting from all the world's injustice. The vision changes, and I see a woman brought up in modern paganism, ruling her pagan people in so queenly a fashion that one of the foremost journals of our country is compelled to say for Ranavalona, - "Measured by her opportunities, by her steadfast adherence to the right, by what she accomplished for her people and for christianity and civilization, this black sovereign is worthy to be ranked amongst the good and true of the world's best white queens. Let her name be enrolled with those women of royal position for whom the world has an honorable place in its history." Woman is not unequal, it seems, to the direction of the affairs of a nation, if you do not ask that her time and strength be given to the direction of that miniature kingdom of heaven, the home. Again the vision changes, and I see a great multitude of men, magnificent men of all ages, past and present, living and dead. the men whose wealth of head and heart has been the world's suberb inheritance, the men of all ages who have been great in statesmanship, in letters, in business enterprise, in philosophy, in philanthropy. And by the side of each there walks a companion, and her form is that of a woman; and they are all alike crowned, both men and women. And they see my wonder, and the august assemblage of men whom the world calls great, make answer as one voice, saying, All we did do our work amidst great toil and discouragement, and overcame many obstacles; and when we should have fainted, lo these who are crowned with us now were also with us then, else had we

fallen by the way. "She was my inspiration," were the words of Wendell Phillips when speaking of his wife. Opening an artist's portfolio of paintings, where Indian-summer tints still live unveiled by winter snows, I find, above the whole, this inscription: "To my Mother, whom,—with capacity and ambitions for any plane of life,—I have ever known in woman's most patient sphere, laborious house-keeper, anxious care-taker, faith ful home-maker."

How far inferior to your own best achievements are these which we have seen? Yet these belong to your especial field of activity. not hers. Into her special departments of life-work, as wife, and mother, and keeper of the household, you cannot attempt to follow her as she follows you into yours. Man and woman have each their respective work to do, and it is very silly child's play to attempt to prove either inferior to the other. And when any young lady discovers that the young man who is spending the evening with her, does so as whiling away an hour with an inferior, she ought to have her father pick him up and carry him out and set him down gently in the gutter to think. I suggest the gutter because I want him to think, and the ordinary man must have surroundings in a measure consonant with his mental status if he is to do any solid thinking. me that the number of young men who make sad work of the wedding ceremony is larger than we like to confess to ourselves. Externally they get through it well enough, and what the minister says is well enough, but they misunderstand him wonderfully. As he repeats the usual form, he who ought to be a man, hears it something after this fashion: You do now take this woman whose hand you hold to be your partner in the lawful prostitution of one to one. You promise to see to it from the first that you have your own way in all things. You pledge yourself faithfully to demand of her the most unlimited physical gratification for yourself, regardless of any loss of health which may result to her. If you should be so unfortunate as to have

any children, you promise to see to it by all ingenious devices that none of the care of the same shall fall upon your shoulders. You further agree to so conduct the monetary affairs of the household that she will be compelled to make special request to you for each individual purchase which it may become necessary for her to make. You promise to see to it that she attends thoroughly to the housework; does not gad around among neighbors and friends; and demeans herself in all things like the dutiful wife we have described.

Then, as the minister turns from him to her who stands by his side, his unworthy ears thus translate the sacred service: In like manner, you do now take this man whose hand you hold, or rather, let him take you. You pledge yourself to him for whatever he pleases, for the man is the head of the woman. You promise in all meekness and humility of spirit to accept his dictation in all matters. You promise never to forget that he is his mother's idol; that the idol has been somewhat wild, but this proves him to be of rare talent, far above the ordinary slowplodding, good, unpretentious young man; and to you is committed the mission of saving the idol. In this virtuous calling you promise to receive anything and everything at his hands, without question; to take care of his house, his children, his good name; and, in all things, be his toy so long as you suit his darling fancy, and at the end of that time to become his faithful house-keeper, while he amuses himself with new toys. You thus pledge yourself to him for better or for worse, with the probabilities altogether in favor of the worse.

It is the man whose heart so translates the sacred ceremony, who is worthy of all contempt for stealing the love and trust of any woman. He has nothing to offer her in return but a heart which is a house of ill-fame, a home which shall be the hollowest of mockeries. Do not, I beseech you, for a moment confound this hideous orgy with the divine institution whose honorable name it purloins; this hideous cave of the passions, with

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the heaven-lighted home. In the quaint phrase of Bacon, "Nuptial love maketh mankind, friendly love perfecteth it, but wanton love corrupteth and embaseth it."

The remaining count made by our friends in their indictment of marriage, lies in the assumption that every-day life and romance, matter-of-fact and matter-of-love, every-day life upon the earth and life up in the clouds, the humdrum of the daily round of common duty and the fairy freshness of the lustrous wedding garment, are not merely in contrast, but in conflict as well, and cannot be coexistent in any such sense as would imply the best realization of both. To this assertion I would make answer that the contrast of discord is one thing, and the contrast of harmony quite another. The flaming daub from which all perception of nature, and all human-heartedness is conspicuously absent, carries with it no mandate which shall chain the inspired hand of the true artist to a single tint. A little child climbs upon the knee of the organist and reaching out it presses down all the keys which both its little hands can cover, and hears with infant glee the discords it has awakened. Shall, therefore, he who is master of thundrous pedal and plaintive upper tone, shun the closest harmony? Shall he play with but a single finger? Because there are vandals who take up the harp of life only to break its strings and rouse the harsh clamor of discord with rude and ruthless hand, shall we in silence dumb refuse to "touch the quivering strings" of life's divinest harmonies? You have not questioned romance, companionship and love, the unseen and eternal; but it has seemed to you that the daily duties, the daily drudgeries, the things seen and temporal, were at war with what might be the highest delight of life. A little thought, I am sure, will convince you that this seeming is a mistaken seeming; that the contrast is that of harmony, not that of discord. What is the proper rank of the meanest of these daily tasks? Could further concession be made than to let the impatient Thomas Carlyle answer this question for us? What does he say? "All true work is sacred; in all true work, were it but true hand-labor, there is something of divineness."

So asserts Carlyle, and some of us recall an old fashioned book which enjoins us to be "not slothful in business, fervent in spirit," which is the same truth in different phrase. There lies a deep philosophy behind the words of the old cobbler;-"My business is serving the Lord; but I mend shoes to pay expenses." Would your ideal eliminate all the prosy functions of daily household life, and make marriage a grand holiday where the sweetest of companionships should be perpetually enjoyed amid Alpine peaks and Italian sunsets, and never be subjected to the strain of disagreeable little tasks, never done, daily recurring, exasperating by virtue of their very inconsequence? Then let me tell you that such a life would land you in an hysteric sentimentalism whose dry rot would eat through and through every fibre of your manhood. There is something of divineness in the meanest work nobly done; there is something of degredation in the noblest pleasure when made a pursuit. Love is divine, and love is not the deifying of self; in all true-hearted work there is something of divineness, and true-hearted work is self-sacrifice. Love is vicarious, and work is vicarious, and neither can live without the other, and together they grow to that gigantic power which keeps in motion the mighty engines of the world's energies. Play and rest, as recreation, are God-given. As a pastime, hell-born.

You are, perhaps, looking forward to the time when it will not be necessary for you to work, and you mean by that the attainment of such vantage-ground that your daily bread and needed clothing and shelter will be provided without calling for your daily labor to earn them. I hope you may realize your anticipation. But if you are a true man, I can tell you something which you may not have guessed. It is this. The time will never come when you will lay down work and take up

play. You have been born into this world of work, and you will work harder and harder until you go out of it. To-day you are not worth a dollar. When you are worth a hundred thousand dollars you will be a harder worker than you are to-day. It may be, it will be, a larger, a more congenial work; your harness will not gall you as much, but it will be work for all that. For if you are a true man the day will never come when you will want to make play your business.

If you ever make the attempt to "sit and sing yourself away to everlasting bliss," you will find yourself sounding depths of hollowness in human experience incredible to yourself. is waiting to be won, but not in any such booby fashion. a stout courage starting out each morning upon the day's work as it comes to us, returning each evening with an honest heart made glad in the faithful doing of that work, before we know it, we have up and worked ourselves "away to everlasting bliss." So we come to comprehend the saying of Horace Bushnell that perfect work is perfect play. So we learn to hate the thought of ever laying down the active exercise of our manly energies. So are we taught to recognize that marriage. and family life, and work, and love, and self-sacrifice, and sturdy courage are the complemental forces which up-build the staunchest manhood. "As for happiness," says Dr. Napheys, "those who think they can best attain it outside the gentle yoke of matrimony are quite as wide of the mark. Their selfish and solitary pleasures do not gratify them. With all the resources of clubs, billiard-rooms, saloons, narcotics, and stimulants, single men make but a mock show of satisfaction."

Fully pursuaded in his own mind of the validity of all these claims made for the benefits conferred by marriage, the young man still finds himself confronted with questions of serious import concerning this most important relation in life. This is one of the few subjects upon which he does not feel able to pronounce instant judgment, in whatever aspect presented—upon

which he is really glad of judicious counsel. When, a baby boy, his eyes first saw the light, he was not more helpless than he now feels in anticipation of this second birth into a new and altogether different existence. At the time of William Cullen Bryant's marriage he sent this letter to his mother:

"DEAR MOTHER: I hasten to send you the melancholy intelligence of what has lately happened to me.

Early on the evening of the eleventh day of the present month I was at a neighboring house in this village. Several people of both sexes were assembled in one of the apartments, and three or four others, with myself, were in another. At last came in a little elderly gentleman-pale, thin, with a solemn countenance, pleuritic voice, hooked nose, and hollow eyes. It was not long before we were summoned to attend in the apartment where he and the rest of the company were gathered. We went in and took our seats; the little elderly gentleman with the hooked nose prayed and we all stood up. When he had finished most of us sat down. The gentleman with the hooked nose then muttered certain cabalistical expressions which I was too much frightened to remember, but I recollect that at the conclusion I was given to understand that I was married to a young lady of the name of Frances Fairchild, whom I perceived standing by my side, and whom I hope in the course of a few ·months to have the pleasure of introducing to you as your daughter-in-law, which is a matter of some interest to the poor girl, who has neither father nor mother in the world.

I have not 'played the fool and married an Ethiop for the jewel in her ear.' I looked only for goodness of heart, an ingenuous and affectionate disposition, a good understanding, etc., and the character of my wife is too frank and single-hearted to suffer me to fear that I may be disappointed. I do myself wrong; I did not look for these nor any other qualities, but they trapped me before I was aware, and now I am married in spite of myself.

Thus the current of destiny carries us all along. None but a madman would swim against the stream, and none but a fool would exert himself to swim with it. The best way is to float quietly with the tide. So much for philosophy—now to business.

Your affectionate son,

WILLIAM."

Taking for our motto the last sentiment of this open-hearted letter, perhaps we cannot "to business" better than to attempt, in the first place, to get a clear conception of the objects of marriage. Many wise people, however successful they may

have been in living the married life, have made woeful blunders in trying to state the object of marriage. The great Hufeland writes himself down after this fashion: "By marriage I understand, a firm, sacred union of two persons, for the purpose of mutual support, and for giving origin to and educating children." There is not a young man of my acquaintance who would give his assent to either of these asserted purposes. Heaven protect them all from the folly and sin of marrying a girl for her money; and aside from this ill-starred contingency, any young man knows that it is as easy for him to support himself, as himself and family; neither does a young man marry because his intended wife needs support. We may safely rule out this proposition.

The other motive assigned is equally wide of the truth, though it may not be as easy to show its fallacy. Young married people, and young people contemplating marriage, do not covet the wedded life because of a desire for children. In fact, the majority look upon possible children as a decided drawback. I shall have something to say of this matter directly, pointing out where the mistake is made, and what a blunder it is to be frightened at the baby faces which we see in the picture of the future's possibilities. But I have no heart to blame young people, looking forward to marriage, for a negative absence of the desire for children. Their desires are fully occupied with each other, and it is right that it should be so. We cannot expect to find an eye which has never seen a worthy building, thirsting for St. Peter's. But right or wrong, as a matter of fact it is seldom the case that a young couple approach marriage for the sake of potential children.

The real impelling power which ought to lead, and does lead, a young man to marriage is the promise it holds out of love, of companionship, of sympathy, of happiness in the best sense of the word, of the most perfectly rounded life. Not that he necessarily recognizes the precise want, or the precise promise. Years before you know what it is, or that it is really what you

want, or just what it does for you, you seek, and find satisfaction in, water. It is in the majority of cases, without doubt, the unknown want, and the unerring instinct, which leads up to the wedding day. Trust the instinct. It will not mislead you. It will do for you what you might fail to do for yourself. It will save from a penury of life which you otherwise might inflict upon yourself.

I have no desire to overlook the drawing toward marriage which comes of that peculiar passion, half physical and half spiritual, which is bound up with the fact of sex, and may be called the appetite or instinct of sex. I am glad of that, too. It, too, is right. Do not make the wretched mistake of thinking it wrong. I know many well-meaning people have helped that impression to find lodgement in your heart. It is a traitor. Get it out. It is hard to have patience with those who prate of "mere animal gratification." It cannot be that. I am not sure but that we wrong it when we call it one-half that. Certain it is that even the veriest libertine would be without it were his poor, distempered imagination blotted out. What if it have not reached, at the very first, the highest estate? Shall we grind under our heel the less admirable jack-in-the-pulpit, because it has not yet become the calla lily? Make it not a fugitive. Give it a right to be, and see how fair a thing it may be "Therefore the Deity sends the glory of youth before made. the soul, that it may avail itself of beautiful bodies as aids to its recollection of the celestial good and fair; and the man beholding such a person in the female sex runs to her and finds the highest joy in contemplating the form, movement, and intelligence of this person, because it suggests to him the presence of that which indeed is within the beauty, and the cause of the beauty.

"If however, from too much conversing with material objects, the soul was gross, and misplaced its satisfaction in the body, it reaped nothing but sorrow; body being unable to fulfil the promise which beauty holds out; but if, accepting the

hint of these visions and suggestions which beauty makes to his mind, the soul passes through the body and falls to admire strokes of character, and the lovers contemplate one another in their discourses and their actions, then they pass to the true palace of beauty, more and more inflame their love of it, and by this love extinguishing the base affection, as the sun puts out fire by shining on the hearth, they become pure and hallowed. By conversation with that which is in itself excellent, magnanimous, lowly, and just, the lover comes to a warmer love of these nobilities, and a quicker apprehension of them. Then he passes from loving them in one to loving them in all, and so is the one beautiful soul only the door through which he enters to the society of all true and pure souls. In the particular society of his mate he attains a clearer sight of any spot, any taint which her beauty has contracted from this world, and is able to point it out, and this with mutual joy that they are now able, without offense, to indicate blemishes and hindrances in each other, and give to each all help and comfort in curing the same. And beholding in many souls the traits of the divine beauty, and separating in each soul that which is divine from the taint which it has contracted in the world, the lover ascends to the highest beauty, to the love and knowledge of the Divinity, by steps on this ladder of created souls.

"Somewhat like this have the truly wise told us of love in all ages. The doctrine is not old, nor is it new. If Plato, Plutarch, and Apulcius taught it, so have Petrarch, Angelo, and Milton. It awaits a truer unfolding in opposition and rebuke to that subterranean prudence which presides at marriages with words that take hold of the upper world, whilst one eye is prowling in the cellar; so that its gravest discourse has a savor of hams and powdering-tubs. Worst, when this sensualism intrudes into the education of young women, and withers the hope and affection of human nature by teaching that marriage

signifies nothing but a housewife's thrift, and that woman's life has no other aim." *

When it is asserted that love, companionship, sympathy, happiness, a symmetrical life, are the objects of marriage, it is not to be understood that marriage is the attainment of these things, but that it is the means, more powerful than all other agencies, of attaining these ends. Marriage is not love. Marriage is not happiness. It is only the royal road to both. So, in spite of its importance, it is not to be considered the one aim of existence. Now and then a young man makes himself unworthy in the eyes of his friends, because he loses sight of this distinction, and pursues marriage as hotly as if it, in and of itself, were the sole and ultimate goal of life. Mistaking the means for the end, he makes but a foolish appearance in the mad chase after marriage before he may fairly be counted as ready for it. Do not throw aside well chosen life-plans in the mistaken attempt to compass marriage at all hazards.

Should it be necessary to remind you that you cannot afford, when you are married, to be unhappy? Remember for what you married. Does not unhappiness overturn every object for which heart was joined to heart? Many a battle-scarred soldier holds the name of "Mother Bickerdyke" in grateful remembrance. For her care for him routed death and brought back life. In a contest with the surgeon-in-charge over a matter of red-tape versus the welfare of her sick soldiers, she exclaimed: "I always said Tom Bickerdyke would have lived ten years longer if he hadn't all the time been trying to boss me!" Though, doubtless, a travesty upon her home life, it was, nevertheless, a saying packed full with the practical philosophy of right living.

Somewhere I have heard the story of a couple who, when the minister pronounced them one, asked him "Which one?" Stay a bachelor all your life, if you do not mean to strive that it

^{*}Emerson.

shall be—not merely suffer it to be—neither one, but both. Or, if worst comes to worst, that it shall be your wife. If it ever comes to the question which shall "give up," and that question you allow to be a question, you have, for the time being, over-thrown every good which can come to you through marriage. Every time you set your way aside, that her way may be the way, no matter how foolish or unreasonable that way may seem to you—doing so in no niggard fashion, but glad that you can do this small thing for her—you have doubled the matrimonial dividend.

What of the obstacles to marriage? As might be expected, the obstructions which may legitimately stop the way to that state which is the natural one for mankind as a whole, are few and well defined. The really permanent barriers do not number more than two. The first is found in consanguinity. Perhaps none is more constantly present in the popular mind than this of immediate blood-relation. By quite general consent, the limit of approach to a common origin which may be permitted those contemplating marriage, is fixed just outside the circle of cousins. The prevalent opinion is that it is better that marriage between cousins be not allowed. There is little question but that this opinion is a correct one, and the prohibition salutary.

Yet the supposed facts upon which this opinion is grounded, turn out to be not fact, but fiction. The union of cousins has been supposed to be almost certainly followed by children both mentally and physically lacking. But this notion proves to be pure superstition. Investigation fails, notably, to endorse the notion. But as few families are without a tendency to some form of physical disease, and as few families have not some mental peculiarity which it were well to soften rather than intensify, and as both these undesirable attributes must almost by necessity be magnified by the marriage of cousins, the attitude of society toward such unions is beyond doubt wise and

commendable. There is nothing to be gained by taking this real, and unnecessary, risk. Even plants are protected from this danger. "At the close of the last century Sprengel published a most suggestive work on flowers, in which he pointed out the curious relation existing between these and insects, and showed that the latter carry the pollen from flower to flower. His observations, however, attracted little notice until Darwin called attention to the subject in 1862. It had long been known that the cowslip and primrose exist under two forms, about equally numerous, and differing from one another in the arrangement of their stamens and pistils; the one form having the stamens on the summit of the flower and the stigma half-way down, while in the other the relative positions are reversed, the stigma being at the summit of the tube and the stamens halfway down. This difference had, however, been regarded as a case of mere variability; but Darwin showed it to be a beautiful provision, the result of which is that insects fertilize each flower with pollen brought from a different plant, and he proved that flowers fertilized with pollen from the other form yield more seed than if fertilized with pollen of the same form, even if taken from a different plant. Attention having been thus directed to the question, an astonishing variety of most beautiful contrivances have been observed and described by manybotanists, especially Hooker, Axel, Delpino, Hildebrand, Bennet, Fritz Muller, and, above all, Hermann Muller and Darwin himself. The general result is that to insects, and especially to bees, we owe the beauty of our gardens, the sweetness of our fields. To their beneficent, though unconscious action, flowers owe their scent and color, their honey, nay, in many cases, even their form. Their present shape and varied arrangements, their brilliant colors, their honey, and their sweet scent are all due to the selection exercised by insects."*

^{*}Sir John Lubbock.

The other barrier which may justly stand a permanent bar against the marriage relation, is found in the presence of certain hereditary diseases having their existence as constitutional taints in the person of the prospective father or mother, or both. Of course, you should possess a fair degree of health before entering upon the founding of a home, for many reasons beside the well-being of prospective children. Should you doubt whether you could fairly be rated at par in health matters, a reasonable attention to physical culture, under the aid and direction of your physician, will be sufficient, ordinarily, to place you beyond question. Marriage is a conservator of health, and with a fair degree of health at the start, you need have no fear for the future. All this is understood. But the question in hand is quite a different matter; and a very weighty one. Every young man should be made clearly to understand that consumption, insanity, and cancer are clearly-I had almost written inevitably-hereditary. Blood will tell. Unknown horses gaining great victories, always prove to have had first-rate ancestors. For the rule works both ways. It is not too much to say that no one commands a closer attention than Dr. B. W. Richardson, of London, when speaking on sanitary subjects. These are his words on the intermarriage of disease: "The induced diseases of modern life cannot justly be considered without a brief, -and it shall be a brief, -reference to one of the most solemn of their predisposing causes. I mean the intermarriage of disease by the union of persons who are strongly tainted with fatal maladies which must in the ordinary course of events, appear in their offspring. It is the common impression that injuries of this class are only effected through marriage of consanguinity. Hence marriage between cousins is objected to; but in plain truth the question of consanguinity is secondary. There is no doubt that if cousins, each possessing an original family taint, marry, the result may be doubly disastrous to the offspring. This, however, is not on account of the consanguinity,

but because both persons are similarly infected with the taint. I mean by this that if they had not been related, and had been similarly infected, the results to their offspring would be the same.

"We ought, therefore, to take a much wider view of the subject than that which is bounded by consanguinity.

"The worst intermarriages of disease are those in which both parents are the inheritors of the same disease, as where both are disposed to consumption, to cancer, or to insanity. Under these circumstances it is all but impossible for the majority of the offspring to escape the inherited disease.

"Intermarriages of distinct diseases are hardly less dangerous. The intermarriage of cancer and consumption is a combination specially fraught with danger. Let one typical illustration of this suffice. A young man of marked cancerous proclivity married a woman whose parents had both died of pulmonary consumption. This married couple had a family of five children, all of whom grew up to adolescence, sustaining at their best but delicate and feeble existences. The first of these children died from a disease allied to cancer, called lupus; the second of simple pulmonary consumption; the third, owing to tubercular deposit in the brain, succumbed from epileptiform convulsions; the fourth, with symptoms of tubercular brain disease, sank from diabetes, the result of the nervous injury; and the last, living longer than any of the rest, viz., to thirty-six years, died of cancer. The parents, in this instance, survived three of the children, but they both died comparatively early in life; the father from cancerous disease of the liver, the mother from heart disease and bronchitis.

"The intermarriage of rheumatic with consumptive disease is productive of intermediate maladies in which the bony framework of the body is readily implicated. Children suffering from hip-joint disease,—morbus coxarius,—are common examples of

this combination. Hydro-cephalic children are frequent results of the same combination.

"The whole of this subject is a modern study in the natural history of disease. Some day it will be so formularized that the learned physician will be able to predict the results of combinations of disease from marriage, with arithmetical accuracy. Whether such knowledge will control the results is a question difficult to answer at this point of time.

"In the present state of our civilization, rank and position are considered all-important elements in the marriage contract. Wealth is considered. Relative age is sometimes taken into account. Religion and race are often made subjects of serious moment. Hereditary health as an element of the marriage contract, of what import is that? Who are so lightly studied as the unborn?

"The first step towards the reduction of disease is, beginning at the beginning, to provide for the health of the unborn. The error, commonly entertained, that marriageable men and women have nothing to consider except wealth, station, or social relationship, demands correction. The offspring of marriage, the most precious of all fortunes, deserves surely as much forethought as is bestowed on the offspring of the lower animals. If the intermarriage of disease were considered in the same light as the intermarriage of poverty, the hereditary transmission of disease, the basis of so much misery in the world, would be at an end in three or at most four generations."

There is one other disease which should make a young man halt ere he leads an unsuspecting bride to the altar. That disease is syphilis. More will be said of it in a succeeding chapter. With a tenacity which makes it impossible to say whether, when once contracted, the system may ever become entirely free from it; with a subtilty which would make it impossible to

^{*}Diseases of Modern Life.

determine when the body was actually rid of it, were such a casting out possible; with the strongest tendency to show its hideous trail upon the faces of innocent children; the worst poison known to science stands a perpetual menace between its victim and the setting up of a home. "Take into view the fact that he who dips himself in the seas of ink ceases to be marriageable. A most delicate theme, you say, to mention to university students. Would God that it were mentioned somewhere every week in the ears of young men in colleges. Would God that the future fire of the hearthstone could lie as a living coal on every tempted heart in our circles of young men in university towns. When I left Phillips Academy a great professor in Andover Theological Seminary said, in a farewell address to my class, and the remark was full of an orthodoxy which I hope will be found at Andover for centuries to come, in all its old earnestness and fire: 'In view of the temptations of a college life, it would be well for every young man to have laid on his heart a living red-hot coal of God Almighty's wrath.' That sentence burned me through. Here and now, I will not say anything quite as startling, but I say: Put upon the heart of young men large gatherings of coals out of their anticipated future family fires. Take the burning incense off the marriage altar, and put it, while yet you are in college, on your heart, and through the ascending clouds of that holy oblation vice will reveal itself to you as the unspeakably odious thing it is."*

To the young man contemplating marriage certain prudential questions present themselves. First in order comes that of the proper age. The age which it is best that he should attain before marrying, and the number of years which wisdom would place between his own age and that of his wife, are questions which confront every thoughtful young man. Let us grasp firmly the fact that marriage is physiological, and that therefore its proper observance should strengthen health, not weaken it.

^{*}Joseph Cook.

Holding this clearly before our minds we shall not misunderstand the admirable precept that "completion of the physical frame should precede procreation." The reason for this is plain. The two great tasks which the body must accomplish are, first, the building up of itself to that stature and hardihood which shall make it equal to life's toil; and, second, the parentage of the succeeding generation. If before the first be completed, a part of the forces are withdrawn from that work for the performance of the second, poor work in both departments will be the natural result. It is safe to say that a young man should reach the age of twenty-five years before considering his physical frame complete, and ready for the second great work devolving upon it. "Previous to the twenty-third year, many a man is incapable of producing healthy children. If he does not destroy his health by premature indulgence, he may destroy his happiness by witnessing his children a prey to debility and deformity. An old German proverb says, 'Give a boy a wife, and a child a bird, and death will soon knock at the door.' Even an author so old as Aristotle warns young men against early marriage, under penalty of disease and puny offspring."*

But having once fairly gotten your growth, the sooner you marry, the better. No other time promises so well for yourself and your children as just this time, when you are in the very flush of early manhood. Dr. William Pratt, of England, fairly bristles with good sense as he takes up the defense of early marriages. He says:—"I am in favor of early marriage. It is nature's appointed plan for gratifying and calming youthful passion. Unfortunately the middle-class world scowls upon early wedlock, and stamps it as a most impudent thing for young people to marry who have not the income of their fathers. Mrs. Grundy keeps her finger ever lifted high, and cries, 'Don't. Anything but that!' And generally it is anything but that! Yet I say

^{*}Dr. Geo. H. Napheys.

to young people, if you have good health, and if you be sensible enough to despise the notions of a foolish society, and not to seek to ape the rich in their style of living; if you can live on plain fare, that is to say no wines nor beers, and only birchen furniture, and not be in the least disturbed because Mr. So-and-So dines better, and Mrs. So-and-So dresses better-if you can do this as common-sense, strong-minded men and women, if you love one another, and understand one another's minds, and are willing to strive uphill together, then-marry. You will be happier, you will be steadier, you will be purer, and in every likelihood vou will succeed better in the world; and having learned and practiced contentment with little, when prosperity comes you will be the better able to turn it to good account for yourselves and others. That is excellent advice of the old saving, 'Marry for love, and work for money.' And there are some good things in this quaint Scottish song:

'When John and me were married,
Our hauding was but sma',
For my minnie, cankert carlin,
Wou'd gie us nocht at a',
I spent my fee wi' canny care,
As far as it wou'd gae,
But well I wot our bridal bed
Was clean pea strae.

'Wi' working late and early
We're come to what ye see,
For fortune throve beneath our hands,
So busy aye were we.
The lowe o' love made labor light,
I'm sure ye'll find it sae,
Tho' ye should mak your bridal bed
O' clean pea strae.'

"Do not believe for a moment that the poetry of life is exhausted when the marriage knot is tied. The post-connubial bliss is sweet if it be sober, and durable if it be gentle. Nov-

elists generally wind up their tales at marriage, as the bourne beyond which no story can go. After that all must be tame. And poets have sung most ardently of the pleasures of courtship, as if Hymen extinguished all delights. And satirists have chuckled and laughed over the sorrows and troubles, the scoldings and quarrels of ill-matched or brutal wedlock. And in many circles there is talk of the bands and bonds of matrimony, and of the necessity to have out one's fling before sacrificing one's liberty. But all that needs no refutation. In a physical point of view—with which view we have principally to do here—the wedded life is the complete life of man. A man without a woman is an incomplete being, and his life is an imperfect existence. Even in a social aspect it is the wedded life which is the foundation of every community, great or small, which means to endure. And certainly the joys of home, and the pleasures of family, though they be accompanied by some cares, far outweigh all the enjoyments of single life, dignified though it may be by the euphemism of single blessedness. There is much and genuine poetry in sharing sorrows with another, all whose sympathy is sure, in the soft prattle by a mother's knee, and in little arms twining round a father's neck -infinitely more than in the shout of bacchanalians, or in the songs of hired sirens.

"Not that I wish to be understood as advising hasty, ill-concocted marriages, or marriages formed without the consent of parents or guardians. By no manner of means. Nearly all such marriages turn out wretchedly ill. All I recommend is marriage, though the means be comparatively scanty, if the health be good, the heart sound, and the prospect fair. At the same time I never counsel any young man to rush into matrimony without studying for a considerable time his proposed life-comrade; and I would add that both he and she should together look at their probable future, and be prepared hopefully to face difficulties, and, if needs be, to bear penury. The

union of two such sensible people will always meet with the approbation of sensible parents. There is no fear for such a couple. They may begin with a bridal couch of 'pea straw'though such a lowly commencement is generally not commendable. But if you be without fortune, and the intended helpmate is too delicate or too dainty to help herself, or to look after the details of a household, from the making of a bed to the cooking of a potato, it is better to abstain from wedlock, at least for the present. To marry under such circumstances would certainly be rash. Poverty is almost sure to come upon such an ill-starred, helpless pair, and, 'as poverty comes in at the door, love will fly out at the window.' The objects for which marriage has been entered into, namely, home and its comforts, will be unattained, and the very vices which marriage was meant to prevent will very likely not be avoided, but being committed by a married man, they will be rendered more hideous, and perhaps be aggravated, as is too often the case, by the additional vice of inebriety.

"Of course by early marriage I do not mean marriage when the first sensations of sex are felt. Marriage before twenty-one in either man or woman is to be deprecated. It is not healthful. The human frame is not sufficiently matured, and as a consequence the offspring are almost sure to be weakly, while the parents are apt to have their own health completely shattered. According to the statistics, the married life is not only the purer, producing the minimum of evil-doers and criminals; it is also by far the most healthy. Take the male sex, and it is seen that from twenty-five to thirty years of age, 1,000 married men furnish 6 deaths; 1,000 bachelors furnish 10 deaths; 1,000 widowers furnish 22 deaths. The figures, however, become very unfavorable if the marriage be contracted before twenty. Out of 8,000 young men married before twenty, their mortality has been found to be, before marriage, only 7 per 1,000; after marriage, 50 per 1,000. With respect to the female sex we

find a similar advantage of marriage over celibacy, but on the same condition. If young girls be turned into wives before twenty a like mortality befalls them which befalls the other sex. Everywhere young married people from eighteen to twenty years of age die as fast as old people from sixty to seventy years of age. The common sense and common law of Western Europe have with perfect justice marked twenty-one as the age of maturity. After that epoch, however, marriage should be contracted as soon as practicable. It is the healthiest and the happiest life; the best for the individual and for the community.

"Timorous legislators and disciples of Malthus deny that early marriage is the best for a country already well peopled. Accordingly they throw all manner of obstacles in its way. They compel the mass of our soldiers and sailors to be bachelors. They offer the majority of public appointments to unmarried men, as premiums for celibacy. This is, however, a bad policy. By it our rulers encourage a vast amount of sin and wickedness, and foster a contagious disease which no Act of Parliament will ever remove, and ultimately induce a diminution in the general health and vigor of the population. would certainly be more in conformity with morality and with true statecraft did our public men rather encourage emigration, provide education, and advocate upon every platform economy and moderation in eating, drinking, and dressing, and give the examples in their own homes and persons, so as to form a public opinion which should stamp respectability, not upon the men of large income and good clothing, but upon the men of simpleworth, irrespective of all externals. At the same time most offices should be given in preference to the honest struggling married men, and that horrible phrase 'without incumbrances' should be banished from our language, and expunged from among the articles of every appointment. Early marriage might then become the fashion, to the great diminution of vice, and without the least increase of our pauperism. On the

very contrary, the descendants of young, vigorous, and healthy parents would be vigorous and healthful themselves, and simply but sufficiently fed, well educated, and nourished in every good principle, they would grow up sure of success in the world; and did ever the old folks need help, which after a life of thrift and virtue would be an exception, the children would be the first ungrudgingly to give it. Parents in the workhouse with sons and daughters living would be unknown. Again an old song:

'When Sandy, Jock, and Janetie
Are up and gotten lair,
They'll help to make the boatie row,
And lessen a' our care.

'When we are auld and sair bowed down,
And hirplin frae the door,
They'll help to keep us warm and dry
As we did them before.'*

Although Dr. Pratt advises marriage as soon after reaching the age of twenty-one "as practicable," twenty-five would more nearly represent the aggregate of opinion held by physicians. But the idea remains the same, be the standard placed at the greater or lesser age. The principle back of both is this; before the attainment of complete physical development, marriage is undesirable, if not hurtful; after such attainment, the sooner the young man marries the better. All medical men hold to this principle, though they may differ as to the precise age which insures physical maturity. And there are many external influences, which, by determining that the daily habit of life shall be in this direction or that, move the mark of physical completion up or down the scale of years.

This standard of age applies to the physical man alone. Mentally the rate of development is so entirely a matter of individual idiosyncrasy and training, that no rule can be given which

^{*}A Physician's Sermon to Young Men.

shall be even approximately correct. If you are a boy at twenty-five, wait until you become a man; it will be no damage to you physically.

On the difference which should exist between the ages of husband and wife, there is marked disagreement between those ideas which have received popular acceptance, and the opinions of those who have written on the subject. It is popularly supposed that a difference of two or three years is most to be desired. Yet Lycurgus, the Spartan legislator, in an age and State where the ruling purpose was physical perfection and endurance, held that the man should not marry before thirty-seven, and the woman not before seventeen; and Aristotle endorsed this opinion in asserting that the husband should be the elder by twenty years. Even our own best authority of modern times on these topics, says: "I think there should always be an interval of about ten years between a man of mature age, and his wife. Women age much more rapidly than men, and as the reproductive functions should cease in both partners about the same time, some such interval as this is evidently desirable. Still, if a man will marry whilst young, there are so many risks of unhappiness from his marrying a mere child of fifteen or sixteen, that it would be well in such cases to seek a companion somewhat nearer his own age." Michelet takes much the same ground: "In the first place, I would wish Agnes to have a husband of an age suitable to her own. I have before given the proportion: twenty-eight years in the man to eighteen in the woman. To depart from this rule there will need to be very special affinities between you, very singular and very rare, too; these may be found, but seldom are." While Bourgeois con-

^{*}Acton.—He is, however, hardly self-consistent, as I find him writing on another page of his work, "My advice to all young men above twenty-five, who are in good health, is, to marry as soon as their circumstances enable them to maintain a wife. Everything tends to prove that the moderate gratification of the sex-passion in married life is generally followed by the happiest consequences to the individual. And no wonder, for he is but carrying out the command of the Creator—'Be fruitful, and multiply and replenish the earth'—in the way appointed by the Almighty Himself."

tends: "It is necessary that the body shall have accomplished its growth; that the functions shall have completed their evolution; that the intelligence shall have acquired its power, and the heart its treasures. Then only is there maturity,—procreative maturity: it is nubility, the age of marriage. Buffon, Haller, Flourens, Beclard, and the greater part of physiologists, fix nubility, in the temperate climates, at the twentieth year for woman, and at the twenty-fifth year for man. It varies a little, according to the constitution, the morbid predispositions, or the state of health of each individual. Almost never should the conjugal association take place before these ages."

I am inclined to think that Bourgeois and popular opinion are in the right. What leads men of signal weight into so wide a variation of testimony, is the mistaken attempt to include in a single statement physical completeness, mental fitness, and simultaneous decline of the special function of reproduction. would insist only upon the physical completion, and make that the sole test in fixing an eligible age. Not before twenty-five for yourself, not before twenty or twenty-two for your wife. Beyond this minimum limit no rule can be fixed. You may be older mentally at twenty-five than another man at thirty-five, or vice versa. The same is true of your wife. Neither is it at all probable that you will be precisely alike in the rapidity of mental development. She may develop early and you late, or you may be a man and she a child. Be sure in this that you be guided by the real facts of what you both really are, unconfused by the artificial measure of your years.

Finally, if there are good reasons for so doing, do not be afraid to wait. Such waiting is courage; not to wait is cowardice. There are many young men who relinquish their plan and hope of a liberal education to gratify their inordinate haste to enter upon married life. Their heaviest loss is not that of the academic education, but in the surrender to their weaker selves, and the consequent loss to their manliness of character.

Do not fear to wait, for if she be worthy love of man she will gladly wait; and pleasures fairly earned are doubly sweet; and the day will surely come when we may write of you,

"But now, with servitors to do his will,
In the grand villa, half-way up the hill,
Sat at the Christmas feast, and at his side
Mouna Giovanna, his beloved bride,
Never so beautiful, so kind, so fair,
Enthroned once more in the old rustic chair,
High-perched upon the back of which there stood
The image of a falcon carved in wood,
And underneath the inscription, with a date,
'All things come round to him who will but wait.'"

If, then, we are to be patient learners in that school of discipline which teaches us to labor, and, if needs be, to wait, shall we apply the lesson to engagements to marry, as well as to narriage itself? Those difficulties in the way of wife and Lome, which the great majority of young men must first meet and surmount, that perfection of physical growth and established mental timbre which all should first attain, these things which delay us in coming into our best possessions, do not necessarily forbid the promise of that possession. The young man who is not worth a cent in the world may hold the most precious promise of a wife; for the costliest things of lite are beyond the ken of dollars and cents. He who knows full well that his intellect needs further training in scholastic halls or in the workshop of the world, may yet be at home in the subtlest reach of rationalistic philosophy, for "the heart has reasons which reason cannot understand." Shall, then, he who waits, wait with the promise or without it? Is a long engagement or a short one most to be desired? Is there anything in the whole subject of engagements, long or short, beyond the circumstances, caprice and preference of the individuals concerned?

Dr. Acton quotes from a work issued by the Young Men's Christian Association, a paragraph favorable to engagements

which may be somewhat protracted, and continues:-"This opinion has been entertained by many excellent men; but if we examine it from a medical point of view, it is very doubtful, to say no more, whether it is desirable for any youth, who has his way to make in the world, to attach himself to a girl early in life, however purely and faithfully. If an adult is in a position to marry, by all means let him do so. If his sexual desires are strong, the power of the will deficient, and if his intellectual faculties are not great, early marriage will keep him out of much mischief and temptation. All medical experience, however, proves that for any one, especially a young and susceptible man, to enter into a long engagement without any immediate hope of fulfilling it, is physically an almost unmitigated evil. It is bad for any one to be tormented with sexual ideas and ungratified desires year after year. The frequent correspondence and interviews cause a morbid dwelling upon thoughts which it would be well to banish altogether from the mind; and I have reason to know that this condition of almost constant excitement has often caused not only dangerously frequent and long-continued nocturnal emissions, but most painful affections of the testes. These results sometimes follow the progress of an ordinary two or three months' courtship to an alarming extent. The danger and distress may be much more serious when the marriage is postponed for years.

"I am aware that to the more romantic of my readers these warnings may be very distasteful. Their idea of love is that it is a feeling too pure and spiritual to be defiled with any earthly alloy. I confess that I doubt whether any but the inexperienced really entertain this notion. During the first passionate delight of an attachment, no doubt, the lower and more mundane feelings are ignored. But they are present nevertheless; and according to my professional experience, are tolerably certain to be aroused in every case sooner or late. Of course, where the affection felt is true and loyal, they may be corrected and kept

within the strictest bounds of the most respectful tenderness; to do this, however, in the case of a protracted engagement is a far harder task than the ardent and poetical lover allows himself at first to think."

The betrothal of a mere boy of fifteen or eighteen years of age, to a mere girl of proportionate years, is always a painful spectacle to the right-minded and sensible. Dr. Holcombe wellsays that "we differ as much from our own selves at different times as we do from each other," and the chances are that the boy and girl who fancy that they know each other so well, will wake up some fine morning to find that they are quite strangersto each other, to their no small mental pain and shock. But farther than this I do not care to go, and I have little sympathy with the words of Dr. Acton just quoted. The pith of hisargument is contained in the affirmation that it is "bad for any one to be tormented with sexual ideas," and that bad resultsfrom this cause "sometimes follow the progress of an ordinary two or three months' courtship." All this is true enough, but it is the danger which besets the pitiably weak man, and him alone; and I assert without fear of contradiction that no man has a right to be weak, that no man has any right to be other than strong. I mean strong as to purpose and will, not strength of physique. For the issue depends upon purpose and will, not upon the habit of body. Away then with the flimsy excuse that one man is born with strong will and another with weak, that one man is born with stability of purpose and another vacillating. Away with the sexual argument against engagements; and let us all set about that cultivation of will and purpose which can make the weakest a tower of strength and the arbiter of his own destiny; and let us say to our appetites, thus far shalt thou come and no farther, neither shalt thou presume to deny to thy master the best earthly companionship which may come into his life. It may be a "far harder task than the ardent and poetical lover allows himself at first to think," but

the hardest battles are best worth the fighting; and what manner of men should we become if we systematically evaded life's conflicts instead of meeting them squarely and fighting them through manfully? I am much more in sympathy with Bourgeois, who answers back from the other side of the English Channel:-"The ancient custom of betrothals is the safeguard for the purity of morals and the happy association of man and wife. This institution was known to the Greeks, the Hebrews, the Romans, and during the Middle Ages. In Germany it has still preserved its poetical and moral character. The young people are sometimes affianced many years before their marriage. We see the young man, thus betrothed, with heart full of his chaste love, absent himself for a time in order to finish his education; to perform his studies of science, art, his apprenticeship to a trade; and to prepare himself for manly life. returns to his betrothed with a soul which has remained pure, with a reason enlarged and fortified. Then both are ripe for the austere duties of marriage.

"Chaste love, consecrated by betrothals, can be cultivated in the midst of work. It lightens toil, it banishes ennui, it illumines the horizon of life with delightful prospects; it excites, in the young man, the manly courage and the high intelligence to create for himself a position in the world; in woman, the noble ambition to perfect herself to become a worthy companion and good advisor.

"During the stormy period of youth, it is the only means of preserving the virgin purity of the heart and of the body. Does any one believe that young men who in good season have in their heart a love, strong and worthy of them, would profane themselves, as they so often otherwise do, in vile affections, in those relations of a day, giving themselves a holocaust to beauty without soul, or even to licentiousness without beauty?

"Unions, thus projected in advance,—freely, from reciprocal esteem,—give time to become acquainted with each other, to appreciate and to fit themselves for each other.

"How far are we, in France, from this prudent delay in marriage! We marry in haste, by chance, without becoming acquainted. How could we not be deceived in one another, even without wishing to be? So, in the place of love, of intimacy, and mutual aid in marriage, how many are there who find only coldness, repulsion, intolerable burdens, continual troubles!"

Most important is the influence of engagement in expanding the young man and young woman into a broader, deeper, sweeter, and truer manhood and womanhood. I recall many an instance in my personal acquintance in which this sudden and substantial growth in both has seemed to me little less than marvellous. To this influence we owe the fact that young men and women are continually surprising us by making much better husbands and wives than we had dared to hope that they could, by any possibility, ever become. "Exalting the most noble sentiments, fortifying the intelligence and the will, it impels sometimes to the highest destinies. How many poets has it created, orators, heroes, artists, savants! speaks of a young man who at the age of twenty years still appeared so stupid that he would have been the laughing-stock of society, if his goodness and modesty had not turned ridicule aside. As ignorant as one could be, his conversation was commonplace, even trivial. He became smitten with a very beautiful young Spanish girl who did not know the French language, and who had no desire to learn it. His passion became violent. In order to converse with his sweetheart, he began the study of her tongue. Then, little by little, his language became animated, easy, full of ideas and charms. In fine, his sleeping faculties took wing. At the end of fifteen months, he was a man truly interesting and instructed."

"The history of the painter Quyntyn is still celebrated. He had pursued the business of farrier for ten years at Anvers, under the name of Mesius. He became amorous of the daughter of a painter, who refused him her hand, swearing at the same time that she would only give it to a painter. his passion, he quit the hammer, and took up the pencil. He was very soon so good a painter that the father accorded him his daughter with great pleasure. He became celebrated; and the pictures which remain from him are still valuable." Charles Dickens, that great delineator of, and sympathizer with, humanity's every-day struggles, in his best work bears testimony to this same increase of incentive to do and be. "I had heard that many men distinguished in various pursuits had begun life by reporting the debates in Parliament. Traddles having men tioned newspapers to me, as one of his hopes, I had put the two things together, and told Traddles in my letter that I wished to know how I could qualify myself for this pursuit. Traddles now informed me, as the result of his inquiries, that the mere mechanical acquisition necessary, except in rare cases, for thorough excellence in it, that is to say, a perfect and entire command of the mystery of short-hand writing and reading, was about equal in difficulty to the mastery of six languages; and that it might perhaps be attained, by dint of perseverance, in the course of a few years. Traddles reasonably supposed that this would settle the business; but I, only feeling that here indeed were a few tall trees to be hewn down, immediately resolved to work my way on to Dora through this thicket, axe in hand.

- "'I am very much obliged to you, my dear Traddles!' said
 I. 'I'll begin to-morrow.'
- "Traddles looked astonished, as he well might; but he had no notion as yet of my rapturous condition.
- "'I'll buy a book,' said I, 'with a good scheme of this art in it; I'll work at it at the Commons, where I haven't half

enough to do; I'll take down the speeches in our court for practice—Traddles, my dear fellow, I'll master it!'

"'Dear me,' said Traddles, opening his eyes, 'I had no idea you were such a determined character, Copperfield!'

"I don't know how he should have had, for it was new enough to me. * * * * * *

"I did not allow my resolution, with respect to the Parliamentary Debates, to cool. It was one of the irons I began to heat immediately, and one of the irons I kept hot, and hammered at, with a perseverance I may honestly admire. I bought an approved scheme of the noble art and mystery of stenography (which cost me ten and sixpence); and plunged into a sea of perplexity that brought me in a few weeks, to the confines of distraction. The changes that were rung upon dots. which in such a position meant such a thing, and in such another position something else, entirely different; the wonderful vagaries that were played by circles; the unaccountable consequences that resulted from marks like flies' legs; the tremendous effects of a curve in a wrong place; not only troubled my waking hours, but reappeared before me in my sleep. When I had groped my way, blindly, through these difficulties, and had mastered the alphabet, which was an Egyptian Temple in itself, there then appeared a procession of new horrors, called arbitrary characters; the most despotic characters I have ever known; who insisted, for instance, that a thing like the beginning of a cobweb, meant expectation, and that a pen and ink sky-rocket stood for disadvantageous. When I had fixed these wretches in my mind, I found that they had driven everything else out of it; then, beginning again, I forgot them; while I was picking them up, I dropped the other fragments of the system; in short, it was almost heart-breaking.

"It might have been quite heart-breaking, but for Dora, who was the stay and anchor of my tempest-driven bark. Every scratch in the scheme was a gnarled oak in the forest of diffi-

culty, and I went on cutting them down, one after another, with such vigor, that in three or four months I was in a condition to make an experiment on one of our crack speakers in the Commons. Shall I ever forget how the crack speaker walked off from me before I began, and left my imbecile pencil staggering about the paper as if it were in a fit! * * *

"I have tained that savage stenographic mystery. I make a respectable income by it. I am in high repute for my accomplishment in all pertaining to the art, and am joined with eleven others in reporting the debates in Parliament for a Morning Newspaper. * * *

"I feel as if it were not for me to record, even though this manuscript is intended for no eyes but mine, how hard I worked at that tremendous short-hand, and all improvement appertaining to it, in my sense of responsibility to Dora and her aunts. I will only add, to what I have already written of my perseverance at this time of my life, and of a patient and continuous energy, which then began to be matured within me, and which I know to be the strong part of my character, if it have any strength at all, that there, on looking back, I find the source of my success. I have been very fortunate in worldly matters; many men have worked much harder, and not succeeded half so well: but I never could have done what I have done, without the habits of punctuality, order, and dilligence, without the determination to concentrate myself on one object at a time, no matter how quickly its successor should come upon its heels, which I then formed. Heaven knows I write this in no spirit of self-laudation. The man who reviews his own life, as I do mine, in going on here, from page to page, had need to have been a good man indeed, if he would be spared the sharp consciousness of many talents neglected, many opportunities wasted, many erratic and perverted feelings constantly at war within his breast, and defeating him. I do not hold one natural gift, I dare say, that I have not abused. My meaning simply

is, that whatever I have tried to do in life, I have tried with all my heart to do well; that whatever I have devoted myself to, I have devoted myself to completely; that, in great aims and in small, I have always been thoroughly in earnest. never believed it possible that any natural or improved ability can claim immunity from the companionship of the steady, plain, hard-working qualities, and hope to gain its end. is no such thing as such fulfilment on this earth. Some happy talent, and some fortunate opportunity, may form the two sides of the ladder on which some men mount, but the rounds of that ladder must be made of stuff to stand wear and tear; and there is no substitute for thorough-going, ardent, and sincere earnestness. Never to put one hand to anything on which I could throw my whole self; and never to affect depreciation of my work, whatever it was; I find, now, to have been my golden rules."

Let me say a few words on doubt. Many an honest-hearted young man doubts his own stability of affection. He is sure that it is easy enough for him, now, to be very much in love with her who, in his eyes, is the fairest in all the world; but as the years go by and children come, and the freshness of youth begins to fade a little,—is he sure that he will then feel as he now does? This is the question that instinctively presents itself to him. He has been taught to distrust beauty.

"He that loves a rosy cheek,
Or a coral lip admires,
Or from starlike eyes doth seek
Fuel to maintain his fires;
As old Time makes these decay,
So his flames must waste away."

He has read these lines and supposes them to be oracılar. He has been brought up in the belief that it is right to so to church on Sunday, and wrong to marry for beauty. Not that

these precepts are closely allied to each other, but they are inculcated with about equal force. He picks up his Shakespeare and reads,—

"What! is the jay more precious than the lark,
Because his feathers are more beautiful?
Or is the adder better than the eel,
Because his painted skin contents the eyes?
Oh no, good friend: neither art thou the worse
For this poor furniture and mean array:"—

and again he is misled by a witness who speaks only a half-truth. Plutarch tells him that "love founded upon beauty does not last"; and he is constantly running across twaddle about "the same spirit in another clay," wherever he may read. What wonder that his head accepts what his heart is continually denying? He knows that he does love a rosy cheek and a coral lip, that starlike eyes do kindle the fires; and therefore distrusts himself, because, forsooth, his head has been taught to distrust his heart. I ask you to reconsider your opinion; to consent to decide the case according to the evidence; to take up your position again in the jury-box, and listen to the witnesses I shall summon in rebuttal.

I first call Rev. Sidney Smith. He says:—"How exquisitely absurd, to tell girls that beauty is of no value, dress of no use! Beauty is of no value; her whole prospects and happiness in life may often depend upon a new gown or a becoming bonnet; and, if she has five grains of common sense, she will find this out. The great thing is to teach her the just value, and that there must be something better under the bonnet than a pretty face, for real happiness. But never sacrifice the truth."

Having called a divine, I next call a poet, John G. Whittier. Listen to his testimony: "Quite the ugliest face I ever saw was that of a woman whom the world calls beautiful. Through its 'silver veil' the evil and ungentle passions looked out hideous and hateful. On the other hand, there are faces which the multitude

at the first glance pronounce homely, unattractive, and such as 'Nature fashions by the gross,' which I always recognize with a warm heart-thrill; not for the world would I have one feature changed; they please me as they are; they are hallowed by kind memories; they are beautiful through their associations; nor are they any the less welcome that with my admiration of them 'the stranger intermeddleth not.' ''

Next I call to the stand the Italian scholar, Ficino, as quoted by Bronson Alcott. He testifies: "The first Beauty is the splendor of the Father of Light, and the figure of his substance. Whence there shines forth a threefold radiance. The first, through angelic minds; the second, through intellectual souls; the third, through beautiful bodies. These reflecting the same light as it were through three different glasses of different colors, and successively a different splendor from the first."

Now I call a doctor, and the celebrated Acton responds to his name, and tells us: "I have been often asked, 'Shall I (other things being equal) marry for beauty?' I answer, 'Yes, if you can get your beauty to accept you.' Let ugly people talk as they may about intellect and the evanescent charms of mere outward comeliness, still some degree of beauty is, if not the first, certainly the second requisite in most cases, to a happy married life. A tolerably large acquaintance with the domestic histories of men, in all ranks of life, has shown me that next to a good disposition, nothing in a wife is so likely to insure domestic happiness as good looks, especially if they are of a lasting kind, not mere bloom or prettiness. We all must acknowledge that good looks are among the best passports in the world. Even children, the most unprejudiced witnesses possible, frankly admit that they like so and so, because she or he has a nice face. It is unwise to undervalue, or pretend to undervalue, the women's advantages of comeliness of face and form. A woman with a good physique starts with advantages that other Physical attractions, women cannot acquire.

again, help to tide over many of those little domestic differences which will occur in married life. * * It would be a curious inquiry, perhaps worth pursuing, whether, even among the lower classes, a comely-looking woman was ever ill-used by her husband, except when he was drunk. In a state of nature we find that animals select the most perfect forms for their mates—thus instinctively providing for the perpetuation of as perfect a species as possible. It would be well in many respects if this example were more closely followed by human beings.

"That I do not exaggerate the importance of bearing these and similar considerations in mind in choosing a wife is tolerably self-evident. I may, however, refer those who require an authority to the Republic and the New Atlantis, to show what minute care Plato and Bacon recommended, in their ideal commonwealths, in the selection of those who were to be mothers and nurses of the citizens." He tells us further that he has submitted his views to a "clever unmarried woman," who has in turn favored him with an opinion. We admit this as evidence. It reads:—

"Almost the first thing a girl is told in the nursery is that beauty soon fades, and that ugly girls are as much valued as handsome ones; but on their first step over the threshold into the world a woman soon discovers the fallacy of this early teaching; and I perfectly agree with Sydney Smith in his remarks upon personal beauty as affecting the destiny of women. Comeliness of form and beauty of feature ought not to be despised, as they are the gifts of God.

"Milton represents Eve as the embodiment of female loveliness. Sarah, the wife of Abraham, was a fair woman to look upon; and Rachel, Jacob's best loved wife, 'was beautiful and well favored.'

"It is, however, very difficult to define in what beauty consists. It is more a kind of pleasure conveyed to the mind of

the beholder than any special personal attraction of form or figure. All nations and ages agree in worshiping beauty of some sort or other. We see it portrayed in pictures and statues; and one of the great reasons for supposing that it is considered desirable in the eyes of man is, that where it does not exist women frequently try to supply its place by artificial means. It is said that Madame de Stael would have given up all her fame and renown to have been as beautiful as her friend Madame de Rocca; and I doubt very much whether we should have felt the same degree of pity for Mary Queen of Scotts had she been as ugly as her illustrious rival Elizabeth.

"It is, however, rare to meet with very ugly women. mere set of features, however beautiful in form, seldom please an educated man, unless they are lighted up by good sense and good temper. A man soon gets tired of the pretty child wife. After twenty-five the bloom of youth begins to fade, and yet what is called beauty often lasts for years; so that, in a general way, it is the mind and morals that in a great measure influence the appearance of women and heighten their attractions in the eyes of men; and however much they may deny it, or try to conceal it, yet I believe there is inherent in every woman's heart a wish to be pleasing and agreeable to the other sex; and as it is in a great measure the destiny of most women to be married, it seems incumbent upon parents to give girls that judicious training in early life which will fit them to be good wives and mothers; and there is, I believe, no greater happiness on earth than is to be found in the married state, where two persons of affectionate dispositions, and equals in birth and station, agree to pass the rest of their lives together, till, in fact, death, and not Lord Penzance, them do part. In the higher grades of life beauty is often a binding tie; in the lowest ranks of life I do not think men deem personal appearance of any consequence. Much of the happiness in wedded life depends mainly upon the woman. She should be the sharer of his joys and the comforter in his griefs. She was made for him, not he for her; and her privileges as his companion are great and many. Now what kind of woman, in a general way, is most capable of heightening his joys and lessening his sorrows?

"Sir Lytton Bulwer has summed up what a man wants in a wife. He wants a companion. 'He does not want a singing animal, nor a dancing animal, nor a drawing animal,—and yet these three last accomplishments have cost many women years of painful toil to acquire; and they often marry a man who cannot appreciate any one of them.' After forty, few women can sing, and few care to dance. A great proficiency in these accomplishments often leads a woman into expensive and dangerous society, where her vanity is fed by excessive praise.

"What a man looks for most in the chosen companion of his heart and home is that she should have, added to a pleasing exterior, a well cultivated mind. Let her have also the "mens sana in corpore sano," good health and good temper; for what we call happiness depends very much upon the temper, and state of the digestion,—much more so, I believe, than we are generally aware of." * * * * *

I next call to the witness stand Bronson Alcott, and his testimony is as follows:—"God is to be considered as beauty, high and divine, and whatever is beautiful is part of God. Beauty is the essence of all order, the ideal of order. Whatever of divine creation diverges from beauty becomes deformed or defamed because of its subsequent connections. These deformities retained are what we see throughout Nature. Not that God necessitates any divergency; but the medium through which beauty passes is insufficient, opaque, and, therefore, it is not transmitted clear and true. Hence all the deformity in the world. He creates in his own image, and nothing but what is beautiful. We are first apparent to ourselves as souls. All deformity in the world arises from human arts. Were we not

sinners, we should all be handsome. The last Adam and Eve will not be like the first, because each generation adds something to perfection. We are none of us what we wish we were. We have an ideal higher than we have attained. We all have peculiarities of form or visage that we know do not belong to us, but by inheritance from a grandparent. Do not we feel as though we were deprived of right? If we descended from the pure and lovely God, and were made in his image, and it is through our ancestry that we share in this deformity, not as God painted us, is not this fate? Everybody feels a little wronged if he or she is not handsome. Somebody has sinned, and this is the symbol. That is what we mean by fate, and that fate is worked by ourselves. The ill of the world to-day is what it is because of our infirmities; our want of harmonious culture; our ignorance and whatever else it originates.

"Beauty is a fruit of the soul, and manifests itself in the flesh in colors, in forms, in gestures, in tones especially, in manners, and in all that a person does. The tones of a just and harmonious soul are all sweet and melodious. If, by any misfortune of descent, we inherit organs which do not lend themselves to these fine tones, that is the fate which is entailed upon us; but this to a measure can be eradicated by the virtue of the being itself. Thus a babe, deformed at birth, may, by virtue of a good life, pass from this world in beauty. Many of us have been brought in contact with persons whose countenances were unhandsome, and yet, when occasion called it forth, a smile of angelic sweetness would light up the face. The being had made itself; the casket was inherited. It is in everybody's power to shape and mould his features anew."

Pardon me if I introduce one more witness. Ralph Waldo Emerson thinks the subject worthy of extended testimony. This is, in part, what he says: "It is a proof of the shallowness of the doctrine of beauty, as it lies in the minds of our

amateurs, that men seem to have lost the perception of the instant dependence of form upon soul." "The ancients called beauty the flowering of virtue." "Every spirit makes its house; and we can give a shrewd guess from the house to the inhabitant. But not less does nature furnish us with every sign of grace and goodness. The delicious faces of children, the beauty of school-girls, 'the sweet seriousness of sixteen,' the lofty air of well-born, well-bred boys, the passionate histories in the looks and manners of youth and early manhood, and the varied power in all that well-known company that escort us through life,—we know how these forms thrill, paralyze, provoke, inspire, and enlarge us."

"Beauty is the form under which the intellect prefers to study the world. All privilege is that of beauty; for there are many beauties; as, of general nature, of the human face and form, of manners, of brain, or method, moral beauty, or beauty of the soul."

"The question of beauty takes us out of surfaces, to thinking of the foundations of things. Goethe said, 'The beautiful is a manifestation of secret laws of nature, which, but for this appearance, had been forever concealed from us.'" "We can not approach beauty. Its nature is like opaline doves'-neck lustres, hovering and evanescent. Herein it resembles the most excellent things, which all have this rainbow character, defying all attempts at appropriation and use. What else did Jean Paul Richter signify, when he said to music, 'Away! away! thou speakest to me of things which in all my endless life I have not found and shall not find.'"

"I am warned by the ill fate of many philosophers not to attempt a definition of Beauty. I will rather enumerate a few of its qualities. We ascribe beauty to that which is simple; which has no superfluous parts; which exactly answers its end; which stands related to all things; which is the mean of many extremes. It is the most enduring quality, and the most

ascending quality. We say, love is blind, and the figure of Cupid is drawn with a bandage round his eyes. Blind;—yes, because he does not see what he does not like; but the sharpest-sighted hunter in the universe is love, for finding what he seeks, and only that; and the mythologists tell us, that Vulcan was painted lame, and Cupid blind, to call attention to the fact, that one was all limbs, and the other all eyes. In the true mythology, Love is an immortal child, and Beauty leads him as a guide; nor can we express a deeper sense than when we say, Beauty is the pilot of the young soul."

"Beyond their sensuous delight, the forms and colors of nature have a new charm for us in our perception, that not one ornament was added for ornament, but is a sign of some better health or more excellent action. Elegance of form in bird or beast, or in the human figure, marks some excellence of structure; or beauty is only an invitation from what belongs to us. Tis a law of botany, that in plants, the same virtues follow the same forms. It is a rule of largest application, true in a plant, true in a loaf of bread, that in the construction of any fabric or organism, any real increase of fitness to its end is an increase of beauty."

"The lesson taught by the study of Greek and of Gothic art, of antique and of Pre-Raphaelite painting, was worth all the research,—namely, that all beauty must be organic; that outside embellishment is deformity. It is the soundness of the bones that ultimates itself in a peach-bloom complection: health of constitution that makes the sparkle and the power of the eye. 'Tis the adjustment of the size and of the joining of the sockets of the skeleton, that gives grace of outline and the finer grace of movement. The cat and the deer cannot move or sit inelegantly. The dancing-master can never teach a badly built man to walk well. The tint of the flower proceeds from its root, and the lustres of the sea-shell begin with its existence. Hence our taste in building rejects paint, and all shifts, and

shows the original grain of the wood: refuses pilasters and columns that support nothing, and allows the real supporters of the house honestly to show themselves. Every necessary or organic action pleases the beholder. A man leading a horse to water, a farmer sowing seed, the labors of haymakers in the field, the carpenter building a ship, the smith at his forge, or whatever useful labor, is becoming to the wise eye. But if it is done to be seen, it is mean." "The line of beauty is the result of perfect economy."

"Beauty is the moment of transition, as if the form were just ready to flow into other forms. Any fixedness, heaping, or concentration on one feature—a long nose, a sharp chin, a hump-back-is the reverse of the flowing, and therefore deformed. Beautiful 'as is the symmetry of any form, if the form can move, we seek a more excellent symmetry. The interruption of equilibrium stimulates the eye to desire the restoration of symmetry, and to watch the steps through which it is attained. This is the charm of running water, sea-waves, the flight of birds, and the locomotion of animals." are faces so fluid with expression, so flushed and rippled by the play of thought, that we can hardly find what the mere features really are. When the delicious beauty of lineaments loses its power, it is because a more delicious beauty has appeared; that an interior and durable form has been disclosed. Still, Beauty rides on her lion, as before. Still, 'it was for beauty that the world was made.' The lives of the Italian artists, who established a despotism of genius amidst the dukes and kings and mobs of their stormy epoch, prove how loyal men in all times are to a finer brain, a finer method, than their own." "Beauty is the quality which makes to endure."

"The felicities of design in art, or in works of nature, are shadows or forerunners of that beauty which reaches its perfection in the human form. All men are its lovers. Wherever it goes, it creates joy and hilarity, and everything is permitted

to it. It reaches its height in woman. 'To Eve,' say the Mahometans, 'God gave two-thirds of all beauty.' A beautiful woman is a practical poet, taming her savage mate, planting tenderness, hope, and eloquence in all whom she approaches. Some favors of condition must go with it, since a certain serenity is essential, but we love its reproofs and superiorities. Nature wishes that woman should attract man, vet she often cunningly moulds into her face a little sarcasm, which seems to say, 'Yes, I am willing to attract, but to attract a little better kind of a man than any I yet behold.' French Memoires of the fitteenth century celebrate the name of Pauline de Viguiere, a virtuous and accomplished maiden, who so fired the enthusiasm of her contemporaries, by her enchanting form, that the citizens of her native city of Toulouse obtained the aid of the civil authorities to compel her to appear publicly on the balcony at least twice a week, and, as often as she showed herself, the crowd was dangerous to life. Not less, in England, in the last century, was the fame of the Gunnings, of whom, Elizabeth married the Duke of Hamilton; and Maria, the Earl of Coventry. Walpole says, 'The concourse was so great, when the Duchess of Hamilton was presented at court, on Friday, that even the noble crowd in the drawing-room clambered on chairs and tables to look at her. There are mobs at their doors to see them get into their chairs, and people go early to get places at the theatres, when it is known they will be there.' 'Such crowds,' he adds, elsewhere, 'flock to see the Duchess of Hamilton, that seven hundred people sat up all night, in and about an inn, in Yorkshire, to see her get into her post-chaise next morning.",

"But why need we console ourselves with the fames of Helen of Argos, or Corinna, or Pauline of Toulouse, or the Duchess of Hamilton? We all know this magic very well, or can divine it. It does not hurt weak eyes to look into beautiful eyes never so long. Women stand related to beautiful nature around

us, and the enamored youth mixes their form with moon and stars, with woods and waters, and the pomp of summer. They heal us of awkwardness by their words and looks. We observe their intellectual influence on the most serious student. They refine and clear his mind; teach him to put a pleasing method into what is dry and difficult. We talk to them, and wish to be listened to; we fear to fatigue them, and acquire a facility of expression which passes from conversation into habit of style."

"That Beauty is the normal state is shown by the perpetual effort of nature to attain it. Mirabeau had an ugly face on a handsome ground; and we see faces every day which have a good type, but have been marred in the casting; a proof that we are all entitled to beauty, should have been beautiful, if our ancestors had kept the laws, -as every lily and every rose is well."

"A beautiful person, among the Greeks, was thought to betray by this sign some secret favor of the immortal gods; and we can pardon pride, when a woman possesses such a figure, that wherever she stands, or moves, or leaves a shadow on the wall, or sits for a portrait to the artist, she confers a favor on the world. And yet—it is not beauty that inspires the deepest passion. Beauty without grace is the hook without the bait." "The radiance of the human form, though sometimes astonishing, is only a burst of beauty for a few years or a few months, at the perfection of youth, and in most, rapidly declines. But we remain lovers of it, only transferring our interest to interior excellence." "All high beauty has a moral element in it, and I find the antique sculpture as ethical as Marcus Antoninus; and the beauty ever in proportion to the depth of thought. and obscure natures, however decorated, seem impure shambles; but character gives splendor to youth, and awe to wrinkled skin and gray hairs." "And, in chosen men and women, I find somewhat in form, speech, and manners which is not of their person and family, but of a humane, catholic, and spiritual character, and we love them as the sky. They have a largeness of suggestion, and their face and manners carry a certain grandeur like time and justice."

This is what our witnesses testify of beauty. The time we have spent in listening to them, has been spent to the best possible advantage if we have learned once for all that beauty is only the incidental external expression of the internal reality—a beautiful heart; that beauty is to be trusted and sought, for it is heart speaking to heart; that though the external, the symbol, may, perchance, lose something of its roundness, the reality to which the symbol bears witness is becoming daily more lovable in the growing fulness of its fadeless bloom. "Beauty is its own excuse for being." How can we have grace of body without grace of mind? What more does the body than express the mind? Take the mind from the body, and beauty and loveliness are gone in a moment.

If it be urged that features which are not beautiful may be made, by cast-iron heredity, the outer garment of a beautiful life, the answer is that the greater is sure to conquer the less, the noble is sure to overcome the base. You would think such a wife the handsomest of women; and you would be philosophically correct in your opinion, though all the outside world should laugh. "Plato tells us that Socrates resembled one of those misshapen pictures of apes and owls painted on the outside of an apothocary's gallipot; but he adds that although the figures were grotesque, the vessel was truly filled with sweet balsams." "The celebrated Descartes had for his first love a young lady who squinted, and never after could he admire any one who saw straight. His imagination associated all her charms with that peculiar obliquity of vision, and could not see them if that were absent." "We love," says Emerson, "any forms, however ugly, from which great qualities shine. If command, eloquence, art, or invention exist in the most deformed person, all the accidents that usually displease, please,

and raise esteem and wonder higher." Our very lives are dependent, every moment, upon the force we call gravity. It makes no difference whether we recognize the existence of the force or not; our degree of dependence is not thereby affected a single particle. The prattling child and hoary philosopher are alike its debtors. In like manner, it makes no difference whether or not we recognize the true source of beauty; the ignorant and instructed are both subject to the laws of beauty, whose workings are everywhere the same. It is for this reason that professional beauties are always so disappointing. So soon as beauty puts itself on exhibition, it commits suicide. By the simple act its very fountain and source are dried up. A heart can no more be flaunted on the stage and stay a heart, than a snowflake can fall on a red-hot stove and retain its crystalline beauty. And the effect is the same, no matter if the truth be not discerned. The result is the same, let the famous beauty be paraded under a shabby circus-tent for the delight of the rabble, or in front of the foot-lights of a luxurious playhouse for the amusement of the wealthy and the cultured. ignorant boor is as dissatisfied as the scholar. The heart can never be deceived regarding those things which are especially its own. There is a subtle philosophy behind that saying of Lavater's that "She neglects her heart, who studies her glass." He would have been equally true had he written, She who studies her glass, disfigures her face.

This confusion of beauty with its external expression is well illustrated in the varying opinions of poets who have attempted to point out in just what woman's chief beauty lies. They have made bad work of it. There are before me a few of their special deliverances on this point. They may be summed up as follows;—her winning smile, her rosy mouth, her brains, her sympathy, her eyes, her grace of mind, her heart, true love, "pure woman's love," love and duty, "the sweet word—wife," "womanhood with honor." They are all right and all

wrong. Each is a legitimate part; no single one the whole. Only let us be sure that we are well rid of the doleful mistake of thinking that beauty of person means deformity of character. It is *prima facie* evidence of a beautiful heart. "Beauty is the purgation of superfluities," said Michael Angelo.

It held an honorable place in the world in the beginning of things. How passing fair in his eyes was his wife, is told of Abraham in a touching legend. We are informed that "when Abraham came to Egypt he shut up Sarah in a box; but at the custom-house the officers asked him to pay duty on his luggage. 'What is it, wares?' asked they. 'I will pay duty on them,' answered Abraham. 'Is it gold?' 'Also on gold,' said he. 'Is it pearls, then?' 'I will pay duty also on pearls,' answered Abraham. 'This will never do,' said the officers. 'Open thy trunk!' As Abraham opened it, the whole land of Egypt was lighted up with Sarah's brilliancy!" And when, many years afterward, a prophet was sent to select a king for the nation which had sprung from Abraham, though his instructions were, "Look not on his countenance, nor on the height of his stature; because I have refused him: for the Lord seeth not as man seeth; for man looketh on the outward appearance, but the Lord looketh on the heart," yet when the chosen one came before him, "and the Lord said, Arise, anoint him: for this is he," it was found that he who had been chosen for his heart, "was ruddy, and withal of a beautiful countenance, and goodly to look to."

"It is related of Michael Angelo that when some person objected that he had represented the Virgin Mary as beautiful when no longer young, he replied: 'Do you not see that the beauty of her soul has preserved that of her countenance?'" Beauty of person and beauty of spirit cannot be separated the one from the other. It was a scientific grouping of things related to each other, when the poet wrote,—

"Her face was like the lily,
Her heart was like the rose,
Her eyes were like a heaven
Where the sunlight always glows."

How familiar our expression, "The true, the beautiful and the good." It is not a hap-hazard phrase, but acknowledges their mutual interdependence. The other day a friend expressed, in my hearing, dislike for a certain young lady. To the remonstrance that he ought not so to speak merely because she was not good looking, the answer came quickly, "Yes, but she isn't one who makes you forget that she is homely." That is it, precisely. The good alone are beautiful. Deceit is ugly and misshapen; truth is the foundation of beauty. You must, then, if you would be wise, marry for beauty, for

"Such perfect friends are Truth and Love, That neither lives where both are not."

Let your head corroborate your heart in its intuition that it is wisest, and safest, and best, to love the beautiful soul whose windows are the "star-like" eyes; to love the "ruby lip" and "rosy cheek," the Grecian form and graceful mien, which are the dim outward expression of the spirit imprisoned within, surpassingly fair. So loving you need never fear that you will ever reach any time in life when you cannot join with Dean Stanley in the words which he penned after the death of his wife, and hid away in his own heart until death claimed him also:

"'Till Death us part."
So speaks the heart,
When each to each repeats the words of doom;
Through blessing and through curse,
For better and for worse,
We will be one, till that dread hour shall come.

"Life, with its myriad grasp,
Our yearning souls shall clasp,
By ceaseless love and still expectant wonder;
In bonds that shall endure,
Indissolubly sure,
Till God in death shall part our paths asunder.

"Till death us join.
O voice yet more divine!
That to the broken heart breathes hope sublime.
Through lonely hours
And shattered powers
We still are one, despite of change and time.

"Death, with his healing hand,
Shall once more knit the band
Which needs but that one link which none may sever;
Till, through the Only Good,
Heard, felt, and understood,
Our life in God shall make us one forever."

If you have been loyal to beauty, another promise of undiminished love and happiness in future years has come with it. For health and beauty belong together. It ought not to be necessary for me to remind you that she who is to be your wife should possess a fair degree of health. And it is very easy to keep right on loving one who keeps right on being full of life. Look at the ideal of womanly beauty as found in classic painting and sculpture, and remember that nature does not countenance shams nor display any but truthful signs, and you will understand why it should be so when I tell you that you will find the beautiful and the healthful going hand in hand.

"But," says somebody, "the beautiful one whom to call my own would be almost too good to be true, would never marry me." If you trust to your money, your education, your position, your good looks, your good clothes, your conversational brilliancy, probably not. If you make any of these a cloak to hide an unworthy heart—your real self being unworthy—I hope she may refuse you. But if a really noble heart betrays itself

through untoward outward circumstances, you need not fear. Benjamin Franklin advised that courting be done in one's everyday clothes. And I have yet to know of any young man of honest heart, who was not wonderfully surprised when his fair lady yielded to his suit. You know the French proverb—"It is the unexpected that happens." "I very well remember," says Dr. Holland, "the reply which a gentleman who happened to combine the qualities of wit and common sense, made to a young man who expressed a fear that a certain young lady of great beauty and attainments would dismiss him, if he should become 'My friend,' said the wit, 'infinitely more beautiful and accomplished women than she is, have married infinitely uglier and meaner men than you are." Any man who, in anything, strives for aught but his highest ideal, suffers a measure of degradation in yielding to such cowardice. You cannot honestly win the heart of any girl who does not fill your highest conception. With true courage set out with the determination to gain her who is your beau ideal, or live a bachelor. There will be small danger of your being driven to the latter alterna-

Do you say, "I have no exact idea as yet, what are the rules for safe wife-choosing?" Well, a great many have been formulated. One of the best is that "a good daughter and sister always makes a good wife." I once heard a shrewd old man say, "Young men, let me tell you if you have any questions to pop, pop 'em to a tomboy romp!" Such maxims as these put a certain aspect of the case, forcibly; still they are but half-truths. There is but one rule of safety which is comprehensive, and free from exceptions. There is a homely adage that "it takes a thief to catch a thief." It is equally true that it takes a heart to know a heart. There is small danger that the needle of a compass will be diverted by a piece of wood, mistaking it for true steel. If you will give yourself no rest until yours is a straightforward, honest heart, there is small possi-

bility that it will be unable to distinguish its kind. Therefore you have no right to talk about the risks of marriage. "I declare," said a young man to a clergyman of my acquaintance, "I don't know about marrying, after all; there are so many risks—it is so easy to be misled!" "Well," came the quick response, "certainly the girl stands fully as good a chance of being fooled, as yourself!"

Though honesty of heart makes for a thorough acquaintance with each other, yet after you have been married awhile you will find that you did not know your wife nearly so well as you had supposed. It was Ben Johnson, I believe, who said that it made small difference whom a man married, for he was sure to wake up the next morning and find that it was some one else. You will wake up to find that she is some one else in her selfsacrificing love for you; in her eagerness to do the uninteresting things of housekeeping, because for you; in her interest in your business plans, and economies for the sake of your success; in a thousand and one directions where you had not expected her to be thoughtful or painstaking. And it is not impossible that you may somewhere find something which seems like a very little fault. Do not let it disturb you. Do not expect perfection in your wife, for to be your wife at all she must have one conspicuous foible,—that of thinking you the best man in all the world. Don't expect perfection in your wife, and again the unexpected will happen, and you will be amazed at the budding perfections on every hand. Do not make the blunder so often made, and live together for years as husband and wife, and yet never really get acquainted with her, keeping her a stranger to yourself. Be so frank and open-hearted that she may know you. Find a way to show her your heart-it is just what she has been waiting for so that she could give her heart to you. Now for the first time do you gain acquaintance with each other. Do not wait for any outward circumstance to do this work for you. Nothing of the sort can do it. It is

often said that a man and his wife begin to get pretty well acquainted with each other about the time children begin to come into the household. Not necessarily. I know husbands and wives to whom children were long since given, who are yet total strangers to each other. That was a shrewd procedure of the law in ancient Zurich. "When a quarrelsome couple applied for a divorce, the magistrate refused to listen to them at first. He ordered that they should be shut up together in one room for three days, with one bed, one table, one plate, and one cup. Their food was passed in by attendants, who neither saw nor spoke to them. On the expiration of the three days, it was usual to find that neither of them wanted a separation."

You ought to have the best wife in all the world. Nor does this imply that you must out-wit all the rest of the world if you get her. By no means. Those young people who are so sure that they have just the one, are doubtless right. The best wife in all the world, for you, may be had without the defrauding of any man. The best possible wife is the one who is best adapted to you, who best fills your eye and your heart. And herein lies the certainty that your wife will be more to your liking next year, than this; until you grow quite indispensable to each other; seeing which certain ones of withered heart take it to be but a weak self-deception, for their foolish hearts are capable neither of the experience nor the appreciation of what is so far above them. It is this intertwining of the two lives which makes it impossible for them to entertain comparisons. The husband sees no other women which by any possibility can suggest a comparison with his wife. Not that he underrates them, or has lost a just perception. Some woman may cross his path who has more regular features, or readier wit; but his affections feel no temptation to wander. We are not units, but individuals. And it is scientifically true that there is no beauty of form or intellect which can come into competition with that

which, for a longer or shorter time, has been growing into that which best meets the hunger of his individual life.

So it is not a race to decide who shall get the best or handsomest female,—each may have the most beautiful wife. But
this puts the burden of choice upon your shoulders. Friends
and relatives cannot tell who would be your most beautiful wife,
for the simple reason that they are not yourself. They cannot
single her out. Listen patiently, heedfully, to their advice—
and then choose for yourself. Do not let them dictate your
choice. It will be a miracle if it do not bring you into distress.
For to outrage your heart is ruinous above all things else. It
will make you heart-blind. It will befog all your bearings. To
repair the damage will take years of patient honesty. When
your heart has once chosen, make it once for all, and maintain
it against all the world, even as it was from all the world.

Love finds employment in the simple luxury of loving. It finds expression in doing for the one loved. Therefore it reaches its greatest enjoyment in, not hugging itself, but in giving delight to its object. Is there any good reason, then, why you should not give yourself the constant happiness of telling, and showing by deeds, your love to your wife ? Do not be so stupid as a great many people you know, and live on the "take it for granted" principle. When it must be taken that way, it is generally not taken at all. The "golden mean" is a perilous thing anywhere and in anything. Don't try to set your feet in any such slippery places. Get just as far to the other extreme as possible; you only make safety more safe. I know one husband who insists on getting his little wife into his lap even when others are about, and she seems to nestle there as if it were no unaccustomed place; and for the life of me I cannot summon any valid objection. For, after all, he who "pretends to laugh at love, is like the child who sings at night when he is afraid." But, Oh! the homes where one would like to introduce that, to them, strange custom! It would be revolutionary; but it

would be a demonstration of the divine right of revolution. Be, then, demonstrative toward the wife. You cannot be anything else and be otherwise than mean. I clip these rules from a passing story in one of our newspapers. They are worthy to be committed to memory by every one who has, or hopes to have, a wife.

Rules for the Husband.

Husband, Love Your Wife.

- 1. Never find fault with her before others.
- 2. Per contra, remember the counsel of the Good Book: Her husband shall praise her in the gates; that is, before folks.
- 3. Bear all her burdens for her; even then she'll bear more than you do, in spite of you.
- 4. If you want her to submit to your judgment, never ask her to submit to your selfishness.
- 5. A woman's life is made up of little things. Make her life happy by little courtesies.
- 6. Love is a wife's only wages. Don't scrimp in your pay.

"Rejoice with the wife of thy youth. Be thou ravished always with her love," is the Scripture's direction for right living. When we hear even the profligate Byron exclaiming with his last breath, "Augusta! Ada!—my sister! my child!" it should make us ashamed of ourselves for ever fearing that family ties might one day become loosened from around our hearts; for doubting the stability of our love.

"Love is forever and divinely new—
As young as when the first heart learned to beat,
As strong, as tender, and as wildly sweet.
The immortal part of us, the crown of few.
Out of the savage lust of life it grew,
As a soft flower groweth out of light and heat.
A spirit of fire that time could not defeat
Which made the antique world it overthrew."

"Every promise of the soul has its fulfilment." The hopes and promises which marriage holds out to the young soul will not fail of their abundant fulfilling. You may not be able to see just how it shall be, but the shall be is not dependent upon your imperfect perception. Eye hath not seen nor ear heard the joy that awaits every soul which, by the warmth and light of the true, the beautiful and the good, is tempted into a growth and unfolding like that of the timid buds of spring. You will never be able to understand, save by experience only, how royally the promises are redeemed, and the hopes realized, which were held out to the soul as the reward of home-building.

"In every man who lives a true life the affections grow continually. He began with his mother and his nurse, and journeved ever on, pitching his tent each night a day's march nearer God. His own children helped him love others yet more; his children's children carried the old man's heart quite out beyond the bounds of kin and country, and taught him to love mankind. He grows old in learning to love, and now, when age sets the silver diadem upon his brow, not only is his love of truth and justice greater than before, -not only does he love his wife better than in his hour of prime, when manly instinct added passion to his heart, -not only does he love his children more than in their infancy, when the fatherly instinct first began its work, -not only has he more spontaneous love for his grandchildren than he felt for his first new-born babe,but his mature affection travels beyond his wife, and child, and children's child, to the whole family of men, mourns in their

grief, and joys in their delight. All his powers have been greatened in his long, industrious, and normal life, and so his power of love has continually enlarged. The human objects do not wholly satisfy his heart's desire. The ideal of love is nowhere actual in the world of men, no finite person fills up the hungry heart, so he turns to the Infinite Object of affection, his heart turns to the affection of the great Mother of mankind; and in the sentiment of love he and his God are one. God's thought in his mind, God's justice in his conscience, God's love in his heart,—why should not he be blessed?"*

There are other considerations touching the question of marriage which the most ordinary prudence must take into account. First comes that of money. What income must be obtained before it will be safe-safe in dollars and cents-for me to marry? Of just how many dollars per year must I be sure, before it will be safe for me to attempt the founding of a home? Not to ask these questions would be to confess entire absence of even a rudimentary common sense. Yet the great majority of young men fix a standard altogether too high, thus needlessly, and unwisely, delaying their life plans. Full of the true courage of living was that reply of the young man, told recently in my hearing. His plans for marriage had been shattered by the breaking of the engagement. "But," said a condoling friend, "do you really think you can support a wife?" "That is not the question at all," was the quick reply. question is, can she and I together run the machine?" reply has the true ring. It makes us sure that they could. is useless to try to make this thing sure beyond possibility of accident. This world knows no such security. Even banks will break. "Trust in Providence and keep your powder dry," is the only practicable rule of action in this matter. be impious to do either to the neglect of the other.

But our ideas of the added expense over that of single life,

^{*} Theodore Parker.

necessary to the setting up of a home, are woefully exaggerated. That versatile Frenchman, Michelet, in speaking of a wife as rescuing one from "the servitude of money," continues, "Receive for a truth this exact mathematical maxim:—Two persons spend less than one.

"I see many bachelors who remain such from sheer fright at the expensiveness of matrimony, and yet spend infinitely more than a married man after all. They live very dearly at the cafes and restaurants, and at the theaters. Havana cigars, smoked all day, are to their solitude an extravagant necessity.

"Why do they smoke? 'To forget,' they say. Nothing can be more disastrous. We should never forget. Woe to him who forgets evils, for he never seeks their antidotes. man, the citizen who forgets, ruins not only himself but his country. A blessed thing is it to have by your hearth-stone a reliable and loving woman, to whom you can open your heart, with whom you can suffer. She will prevent you from either dreaming or forgetting. We must all suffer, and love, and think. In that is the true life of man. Some men call themselves bachelors. But are they really so? I have long sought, but I have not yet found that mythical being. I have discovered that everybody is married; some by temporary marriages only, it is true, -secret and shameful these, lasting sometimes for months, sometimes for a week, and often only for an hour. These marriages of hourly duration, which are the utter degradation of the woman, are not effected at, a less cost to the man. It is easier to feed a whale than a Dame aux Camellias.

"If the wife has no female friends whose rivalry incites her to extravagance in dress, she spends almost nothing. She reduces all your expenses to such a degree that the formula given above is no longer correct. We must not say 'two persons,' but 'four persons spend less than one.' She supports the two children besides.'

The italics are his own. I reproduce them as necessary to

the faithfulness of the quotation, not because I wish to endorse an exact interpretation of his propositions. I do not think they will bear a strictly literal construction; neither do I like the manner in which he classes all single men as libertines, even though he write for France only. But no people contend with the French for the reputation they have won in economics—they are the acknowledged masters of economy—and the general idea running through the passage quoted will bear the test of actual experiment. It is undoubtedly true that, with rare exceptions, young men lay up nothing until after they are married, or are planning to be married in the immediate future. I do not forget that much is expected nowadays, of the young couple, regarding the style they affect in setting up their home. But

- "Cursed be the social wants that sin against the strength of youth!

 Cursed be the social lies that warp us from the living truth!
- "Cursed be the sickly forms that err from honest Nature's rule!

 Cursed be the gold that gilds the straiten'd forehead of the fool!"

Is it an unworthy task to set a brave example of home-founding in exact proportion to one's means? Is it not high time for young men and women to get over the notion that they must begin life just where their fathers and mothers left off? "The love which brings the two together and which should bind them together, requires only a comfortable home of respectable appearance. Young married people should begin like young married people; it is more orderly and more conducive to the welfare and true happiness of each that, as time passes on, they build up their fortunes together, each helping the other—thus affording new charms that no other course will or can yield."

I fancy that if the Pilgrim Fathers had waited to found a colony until they could build the Boston of to-day, and the Dutch had refused to drop anchor in the Hudson until they could

^{*}Dr. H. N. Guernsey in Plain Talks on Avoided Subjects.

cover Manhattan Island with the vast city of the present, and William Penn had declined to lay out a town which should be anything less than our Quaker City, the home of earth's greatest nation would to-day be but a howling wilderness. Begin housekeeping in a single room if necessary, but begin. Willing hands and average health are sure to earn a living.

I have said nothing about boarding, or about living under the parental roof instead of setting up your own home, -neither have I advised you not to live on candy, and to go in when it rains. It would be absurd to waste time on such things. can hardly be necessary to warn you against the dishonesty and danger of attempting the solution of the monetary problem by the wedding of a wealthy wife. It is the killing of two birds with one stone, with a vengeance. One of the birds may be very much of a dove, and the killing cruel. The other is sure to be a cross between a hawk and a goose, and the killing merited. If the wealth comes unsought, accept it as an element of risk introduced which cannot shake your purpose, but never seek it. It is dangerous because it is a perpetual challenge of your natural position as head of the household; the abdication of which position brings unhappiness to the wife as well as to the husband. For she finds joy and peace in that husband whose clear head and stout arm form a real bulwark between her and the rude jostlings of the outer world. Says Michelet, "Twelve years ago, I set up this axiom, which every day acquires additional verification. 'If you wish to ruin yourself, marry a rich wife.",

The dishonesty of seeking money in this way needs no comment. A prominent divine, writing of this hateful thing, does so under the heading, "Marriage as a Crime." Writing from the woman's standpoint—is not the guilt equal, no matter which may be the sinner?—Louise Chandler Moulton affirms, "The woman who deliberately marries for money has something to boast over her 'unclassed' sisters of the demi-monde in pro-

priety, but little in principle." In all probability your wife's father will be a man worth more money than yourself; it is natural that it should be so, for he has been at work longer than have you, and has beside had a wife to help him take care of what he earned, which is no small advantage. But this does not by any means imply that you will be denied the privilege of paddling your own canoe; and do not indulge any mistaken fear that to ask the daughter of a favored home to share with you a less luxurious residence, is making a request involving a self-sacrifice which you ought not to ask. If she loves you the humbler home will be the brighter; the best your love can afford, grander than the king's palace.

The genial pen of Robert J. Burdette was never set to truer words than when it wrote the following reasons why Telemachus should get married:—

"Get married, my boy? Telemachus, come up close and look me right in the eye, and listen to me with both ears. Get married. If you never do another thing in the world, marry. You can't afford it? Your father married on a smaller salary than you are getting now, my boy, and he has eight children, doesn't have to work very hard, and every year he pays a great pile of your little bills that your salary won't cover. your father was just as good a man at your age as you are now. Certainly, you can afford to marry. You can't afford not to. No. I'm not going to quote that tiresome old saying that what will keep one person will keep two, because it won't. A thousand dollar salary won't keep two one thousand dollar people; but it will keep two five hundred dollar people nicely, and that's all you are, just now, my boy. You need not wince or get angry. Let me tell you, a young man who rates in the world as a five hundred dollar man, all the year round, Monday as well as Saturday; the day after Christmas just as well as the day before; the fifth of July as well as the third, he is going

to rate higher every year, until he is a partner almost before he hoped to be a bookkeeper. Good, reliable five hundred dollar young men are not such a drug in the market as you suppose. You marry, and your wife will bring tact, and love, and skill, and domestic genius, and womanly economy that will early double your salary. But you would have to deny yourself many little luxuries and liberties? Certainly you would; or, rather, you'd willingly give them up for greater luxuries. And you don't want to shoulder the burdens and cares of married life? I see you do not. And I see what you do not realize, perhaps, that all your objections to marriage are mean and selfish. You haven't given one manly reason for not marrying. If you do marry, you are going into a world of new cares, new troubles, new embarrassments. You are going to be careful and worried about many things. You are going to be tormented with household cares and perplexities, all new and untried to you. You are going to be pestered and bothered and troubled. You will have to walk the floor, with ten pounds of baby and a barrelful of colic, when you are nearly crazy for sleep. You will have to tell stories to the children when you want to read. You will have to mend a toy for young Tom, when you ought to be writing letters. You will have to stay at home in the evening, when you used to go to the club. The baby will rumple your necktie and the other children will trample into your lap with their dusty shoes. Your wife will have so much to do, looking after the comfort of her husband and children, that she won't be able to sing and play for you every evening, as your sweetheart did. Your time will not be your own, and you will have less leisure and freedom for fishing and shooting excursions, camps in the mountains and yachting trips along the coast than your bachelor friends of your own age. I admit all this. But, then, you will be learning self-denial; you will be living for some one else; you will be loving some one better than you

love yourself, and more than a thousand fold that compensates for all that you give up.

"Why, you want to remain single now, my boy, just because you are selfish. And the longer you remain single the more this selfishness will grow upon you. There are some noble exceptions among bachelors, I know, and some mean ones among married men; and a selfish married man needs killing more than any other man I know; but, as a rule, just look around your own friends and see who are the unselfish men. Who is it that gives up his seat in a street-car to a womannot a pretty young girl, but a homely wrinkled woman in shabby dress? Who is it heads the charity subscriptions? Who pays the largest pew rent? Who feeds the beggar? Who finds work for the tramp? Who are the men foremost in unselfish work? I know your young bachelor friends are not stingy! Oh, no! I know Jack Fastboy paid \$570 last week for a new buggy; it is light as a match-box, and has such a narrow seat that he never can ask a friend to ride with him; and at the same time, Dick Slocum, who married your sister Alice, five years ago, gave \$250 for the cyclone sufferers. I think the angels laughed all that afternoon, my boy; but I don't think it was because Jack paid \$570 for his new buggy. If you want to shirk the responsibilities of life, my dear boy, you may; if you want to live forty or fifty years longer, with no one under the heavens to think about, or care for, or plan for but yourself, go ahead and do it. You will be the only loser. The world won't miss you nearly so much as you will miss the world. You will have a mean, lonely, selfish, easy time, and, unless you are a rare exception to your class, little children will hate you, and the gods never yet loved any man whom the children disliked."

Nor need you worry about the wedding trip. When you have brought yourself to the sensible conclusion that you cannot afford to deprive yourself of ten years of married happiness merely to gratify the foolish notion that you must have a home

in equal style with some friend who has more money than have you, it would be foolish to insist upon having just the same sort of wedding tour that he had, anyway. If you have delayed until this time some trip which you have fairly earned, which is not, for you, an unwarrantable extravagance, and which is to furnish your mind and broaden your horizen, by all means take it. Home entanglements and business cares will make it more difficult to get away a few years hence. But if you imagine that in so doing you and your wife are getting more solid satisfaction out of each other's society than if you were by some little lake, with woods and fields and all out-doors at your command; camping out perhaps, or under some hospitable roof of humble pretension where you could not if you would find opportunity to spend more than a few dollars a week, -if you suppose that there is more enjoyment in the trip of steam and style, than in a sojourn close to nature's heart, you make a very common, and a very stupid blunder. To mingle in the swift current of humanity's restless, artificial tide, costs money. The beauty and wisdom in stump, and stone, and flower, and tree, in the finny life below the water's surface, and the feathered life above your head, are without money and without price. their presence the impudent purse hides its head in shame and confusion at its own impotence.

At all events, do not put the savings of a year, which by right should go to make the home attractive, into a feverish trip of a few weeks. Both you and your wife need rest and quiet after the busy hours and many excitements which culminated in the wedding. See that you get it, be thoughtful of her and see that she gets it, whether the first days be spent on an express train, by the side of a babbling brook, or within the charmed precincts of your own home. And now that you have done the brave and noble thing of marrying on the strength of love and faith and work, rather than money, shun the mistake which sometimes steals the honor from such action. Do not

put off your happiness. Do you understand? What I mean is this. Do not say to yourself, Well, now we are married; and we'll get along pretty comfortably until we can afford to live in such-and-such a house and have so-and-so, and then we'll have a splendid good time. My dear fellow, that is the sort of time you ought to have just now. Don't spoil it all by saying that.

If you don't have just that sort of a time now, you never will have it. You won't know how; and you will make a ridiculous spectacle of yourself trying to have it. You ought to be happier one, five, ten years from now, than you are now, because you will have grown more and more into each other's hearts. But money, and the style of living will have nothing to do with it. And if you put off being your very happiest, it will be like the boy who won't go to school just yet. The chances are altogether on the side of perpetual ignorance; and if he prove the fortunate exception, at best he will begin at twenty-five just where he should have been at fifteen. wait for anything. Be your happiest to-day. "He travels safe and not unpleasantly, who is guarded by poverty and guided by love," said Sir Philip Sidney. "And all ye young hearts," says Prof. Swing, "who are just entering upon this great debate about pleasure, where it is to be found, do not fall into the error that when you become rich then you will try to be happy. Happiness is the most accommodating of all things. It will come to a cottage as soon as to a palace. You need never wait for any outward pomp to come. As the sunshine of the Almighty will shine through a simple vine as richly as upon the velvet of a king or upon the gilded dome of a temple, so happiness falls with equal sweetness upon all whose minds are at peace and in whose hearts flow the good thoughts and good sentiments of life. Never for a moment admit that any millionaire or king can surpass you in the possession of that peace of mind and smile of existence which we call happiness. Here you are equal to the highest."

Just one word more about money. Do you wish your wife to keep her fair face, unmarred by the wrinkled paths of care and friction? Yes. Do you want the plump, round form to stay so? Yes. Do you want the freshness of youth to abide with her in all its beauty? Yes. Do you want her ever to bless the day when she gave her heart and hand to you? Yes; why do you ask such questions, and what has all this to do with money? Because your wife's health and happiness depend upon money. But you have just said that happiness does not depend upon money. By no means. It does not depend upon the amount of money. In the words of Micawber, "Annual income twenty pounds, annual expenditure nineteen ought and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result miserv." How is it with your wife since she has been your wife? It does not matter that you provide house, and table, and tickets to the lectures, and pew rent. No one can live in this world and be other than a savage—least of all can any one be such a perfect pattern as is your wife—and have no other uses for money. Apply Micawber's test. Is her "annual income" "ought," and her "annual expenditure" "six"? Too pitiful to reach pounds at all, the principle remains the same, and the result is still "misery." And misery means fret, worry, friction, illhealth, fading, unhappiness.

Ah but, you say, I give her all the money she wants. My dear boy, you are not a fool, and don't pretend to be one. That is not income, that is alms. She bears faithfully her share of the daily toil and care just as truly and really as do you. What are her earnings, what does she make? Nothing. You "give" her money when she needs it. Indeed. And pocket her earnings meanwhile. Aren't you just a little ashamed? But then you just "handle the money as a matter of convenience." Whose convenience? Certainly it is her inconvenience. Of course you respond liberally, without question,

when she suggests a want. I am intimately acquainted with a couple who are happy and devoted. The husband provides for his family liberally. "Well," says the wife hesitatingly, "I shall have to have some money to-day." "How much, Pet?" he replies with the utmost readiness. "Well," still with hesitancy, "Jamie must have some new stockings, and then there is that lining, and "-" Well, but why don't you tell me how much? It's all right of course. How much do you want?" "I guess it will be as much as two dollars." He tosses twice that in her lap (he is one of the best of husbands), and goes out of the gate saying to his friend, "I declare, she acts as if I didn't want to give it to her!" And he will never see the reason; and she, poor thing, will never understand that things are not just as they should be. It is so easy to be blind. Let the wives have the same independent monetary existence that the husbands have, and two-thirds of them will be out of the doctor's hands in six weeks. You don't understand it? If you had to ask money of her for the barber, for the cigars, for the newspapers, for your railway fare, for your clothes, for everything, you would be down sick in a month. Put any human beings, men or women, where they can earn nothing-are given everything-and none of them will be thoroughly well for a single week. You make your wife a bankrupt. And bankruptcy strangles elasticity and murders health. When Northern Pacific goes down, Villard falls into the hands of the doctors. See to it that your wife has an income; not a charitable allowance, but one to which she feels she has a right because she has earned it, one which is hers by the same right that yours is yours; and one the disbursement of which is not necessarily to run the gauntlet of your approval, any more than you feel under obligation to have her audit and approve every expenditure of your own.

Dr. Dio Lewis published some months ago, in the New York *Independent*, the story of one wife; and it tells the story so truthfully, tells a story which almost always remains untold,

because, in this instance, there was a miraculous deliverance; tells it with such fidelity to the pathos which fills the lives of many wives which we meet daily in our social contact, that I repeat it here.

"For three years Mrs. — had been a sad, nervous invalid, when by the death of an uncle she came into possession of bonds which yielded an annual income of \$3,000. At once her health began to improve, she walked erect, and her face became radiant. Since her marriage she had become a beggar; and beggars are not strong in health, noble in bearing, or happy in face. Her husband was rich, and a good man; but 'careful' about his money. He never parted with a dollar if he could possibly keep it. Their house was handsome and their table good; but while Dora, the servant, who dressed quite as well as her mistress, was not obliged to beg for money, Mrs. — could not get a dollar for personal expenses without explaining, urging—in brief, begging.

"Visiting her mother in another state she related, with many tears, the following story: 'I needed a warm dress in the Autumn; but so great was my repugnance to asking John for the means that I put it off till midwinter. One evening we had company, and John was delighted with their praise of my singing. After we had retired, and he had spoken very warmly of my success in entertaining our friends, I thought the moment auspicious, and in the most gentle way mentioned the needed dress. John was silent for some minutes, and then said:

"'Why, my darling, I thought you were the best dressed woman among them. Don't you think, dearest, it's a foolish thing to go on adding dress after dress, when your closet is so full that you can hardly get into it? If you will take my advice, I should say wear out some of the dresses you already have.'

"Not another word was spoken by either of us. I did not chose to tell him that the dress I had worn that evening was

my only handsome silk, and that my only warm woolen dress was worn out. I could not sleep, and before morning resolved, come what might, I would never beg again. That vow I have kept. During two years I have had no additions to my ward robe, except the woolen dress you sent to me. Not one word has passed between my husband and self on the subject. Oh! how often I think of the sweet independence of my life as a music teacher. When I gave myself to John it was easy to make me happy. I asked but little, and you know, mother, I never shrink from care and labor. But now that dear Uncle Eben's bonds give me the the means to clothe myself, and assist my nieces as I used to, I shall forgive, forget, and be happy again. John is urging me to transfer the bonds to him, and let him take care of them for me."

"My daughter, will you do it?"

"Why, Mother, I have kissed those dear, dirty, beautiful, old yellow bonds again and again, because they have made it possible for me to become a happy and loving wife. I tremble when I think how near I came to hating my husband. I shall keep the bonds in my own hands. They are really and truly the only bonds that bind me to life."

As to children and the reproductive act and instinct, I would speak very plainly and in all kindliness of spirit. Those who would do right make so many and egregious blunders just here, and thereby miss so much happiness, and make so much misery for themselves, that my heart grows pitiful as I write, and it seems as if I were talking to little children crying in the dark. I want you to think of these things as gifts from the hand of the Creator. Who gave you the sense of taste which makes the eating of your daily bread a pleasure? Who gave you an eye which would picture the tints of the sunset and the coloring of the landscape? Who painted the flowers and gave them perfume? Who gave us the divine attribute of parentage, and who made procreation the highest physical delight? I pro-

test that He who conferred parentage upon us, who fashioned artery and vein and nerve and erectile tissue, who devised the reproductive mechanism and ordained that man should be born of woman, is not honored by the attitude of our homes on this subject. How many seem to think they are "doing God servvice" when they scorn and spurn and deride and pour sarcasm upon the reproductive function! It may not be in words—the things unsaid and gathering the impetus of years bear a stronger testimony than words ever carried with them. Is the sexual. appetite from heaven or from hell? Shall we make a distinction with a difference between a brothel and a home? Or shall we, by the force of our unconscious influence, teach our children that the difference between the two is but an arbitrary mandate of society? To so bring up children is little less than wicked. The baleful consequences are two. First, you have brought the sacred so near the boundary of the illegitimate that you have no right to be surprised if your child steps across the line. By your unbroken silence, too, you have aroused curiosity to the highest pitch through the air of mystery thus thrown around it. Second, the function and its pleasurable sensations are under the control of the mental emotions, and if you teach your children disgust, you must not be surprised if their pleasure in after life be permanently curtailed.

On the other hand, those who have stood ready to befriend this much abused instinct, have injured their own cause by the "consummation" nonsense. They speak of sexual intercourse as the "consummation of love." This is notably untrue. Love, that perfection of self-sacrifice and self-abnegation, that all-vivifying, all-energizing, all-pervading force which moves, not mankind merely, but keeps the universe together, "for God is Love,"—love is far above any such consummation. What they should say, and what is true, is that marital intercourse is this highest physical expression of love. In speaking of children we often hear used the expression, "pledges of

affection"; and the proper view of the reproductive act fully justifies the expression.

More than this, it should be, to both, the highest physical enjoyment. I say should be, for I am aware that many times it is not. When it is not, the blame is to be laid at the door of the husband's ignorance. Let me whisper in the ear of every young man that he should be very, very gentle indeed, in the first claiming of this highest physical expression of love. "The first use a man makes of every power or talent given to him is a bad use. The first time a man ever uses a flail it is to the injury of his own head and of those who stand around him. The first time a child has a sharp-edged tool in his hand he cuts his finger. But this is no reason why he should not be ever taught to use a knife. The first use a man makes of his affections is to sensualize his spirit. Yet he cannot be ennobled except through those very affections. The first time a kingdom is put in possession of liberty the result is anarchy. time a man is put in possession of intellectual knowledge he is conscious of the approaches of skeptical feeling. But that is no proof that liberty is bad or that instruction should not be given. It is a law of our humanity that man must know both good and evil; he must know good through evil. There never was a principle but what triumphed through much evil; no man ever progressed to greatness and goodness but through great mistakes."

In the first exercise of this power, be sure that all your mistakes are on the side of gentleness. Remember that nature should have time to adapt itself to the new order of things. Remember that mucous surfaces lying in prolonged and uninterrupted contact with each other, grow very delicate and sensitive. Remember that they must be gradually educated up to tolerance of this intrusion to which they have before been utter strangers. Remember that nature works by gradual alteration, not by sudden change; that it yields in most kindly fashion to

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gradual dilatation; and that you need feel no anxiety because full completion of the act does not accompany the first or second essay. Remember that because you feel the fires of passion kindling, it does not necessarily follow that she feels the same; and that, by means of all the little loving arts, you should see to it that both fires are burning before an enjoyment is sought which should be purely mutual. Remember that you should here apply rigidly the principle of Horace Mann's golden rule of play,—"No fun at all that is not fun for both sides." Remember that a thoroughly tired brain, or body, or both, do not feel the rising tide of desire, and ought not to be expected to feel the floodtide when at the ebb. Remember these things to the lasting happiness of yourself and your wife.

"We may outrun By violent swiftness, that which we run at, And lose by overrunning."

The emphasis I lay upon these things is not that of an overdrawn imagination. It cannot be made too strong. I wish I "The first intercourse," says Dr. might make it stronger. Austin Flint, Jr., "in the female is usually more or less pain-"When married," says Dr. Henry N. Guernsey, "the battle for one united and harmonious life really begins. wife's great and supreme love for her husband personally, will allow many privileges which under other circumstances her timidity and chastity would refuse. Tenderly and with great consideration should these privileges be accepted. For, contrary to the opinion of many men, there is no sexual passion on the part of the bride that induces her to grant such liberties. how exquisitely gentle and how forbearing should be the bridegroom's deportment on such occasions! Sometimes such a shock is administered to her sensibilities that she does not recover from it for years; and in consequence of this shock, rudely or thoughtlessly administered, she forms a deeply rooted antipathy against the very act which is the bond and seal of a truly happy married life." "The initiation into marriage," says Dr. Napheys, "like its full fruition, maternity, is attended with more or less suffering. Much, however, may be done to avert and to lessen the pain which waits upon the first step in this new life.

* It sometimes happens that mar riage is consummated with difficulty. To overcome this, care, management, and forbearance should always be employed, and anything like precipitation and violence avoided. Only the consequences of unrestrained impetuosity are to be feared."

"I trust all men," says Mrs. E. B. Duffey, "do not go to the excess of brutality; but is there one man in ten who does not insist on the payment of the conjugal debt on the first night of marriage, be his wife's reluctance and terrors what they may? Is there one man in a hundred, who will give his newmade bride a week to become accustomed and reconciled to the idea of the new relations to which she is pledged? Is there one in one thousand who is willing to wait with the same patience, and to use the same arts that the libertine in his superior wisdom knows so well how to employ-arts perfectly proper and commendable in lawful wedlock-even though it may take months before his purpose is gained, so that his wife shall be a willing partner to the consummation of marriage? Oh what an amount of physical suffering to women might be saved by such a course! But all this is hardly worth mentioning, when we consider the unhappiness, disappointment and disgust it brings the young wife-feelings which she probably does her best to conceal, for she cannot bear to own even to herself how great is the shock to her sentiments and affections. But the romance of life is gone for her with this rude awakening. Passion, which she, while still unmarried, had looked forward to as something to bring her pleasure, is by this rude and violent masculine gratification, presented to her in so hideous a guise, that it will take the utmost consideration on the husband's part

afterwards, to enable her ever completely to overcome her repugnance. But, probably, her husband goes on in his infatuated blindness, and adds to her disgust by excesses. have lived conscientiously the purest of lives before marriage, and that act has opened the door of gratification to him. has never in all the phases in which the matter has been presented to him, heard that there should be any limit in the conjugal relations save that imposed by satiety. In fact, the contrary idea is rather held, among even the best of people, that it is desirable that the conjugal debt shall be frequently paid, as an incentive to affection. * It is easy to imagine the unsatisfactory conjugal relations which are brought about in punishment of the husband's early impetuosity and ignorance. Do not be in too great haste to brush the bloom from

* * Do not be in too great haste to brush the bloom from the fruit you covet. It will lose half its attractions at once. Practice in lawful wedlock the arts of the seducer, rather than the violence of the man who commits rape; and you will find the reward for your patience very sweet and lasting."

Even the optimistic and romantic Michelet feels it necessary to be, for him, strangely definite here. He says; -"What I have to say to you is this: I make and institute you her protector against yourself. Yes, against yourself. Do not attempt to deny it; at this moment, you are her enemy. A gentle, respectful, and loving enemy, it is true; but no less an enemy for all that. Let us cut short the insipid things that a man of the world would say about what the good breeding of gentlemen prompts them to do on such occasions. I know that when the greater part of them reach marriage, their ardor has been spent in the life they have led, in a great, too great, experience of pleasure. But even for those who are the most blase, it is a matter of amour propre, of vain impatience. This may have endless consequences. Hence, I believe here in that quotation from Natural History, which, though it may sound harsh, is very comprehensive: 'The male animal is very fierce'-a verdict unhappily confirmed by medicine and surgery, which are too often consulted as to the consequences; and by those who, when cool, are indignant at the impious fury which can sully so sacred a moment."

Can it be necessary to say anything further? One would think not. Yet the happiness of so many lives is marred just here, lives which should have overrun with love and gladness, that I am even yet in dread lest the warning may not be suffi-"The husband who begins with his wife with a rape, is a lost man," said Balzac. I wish I might brand that saying upon the heart of every young man. With what a sweet confidence has she put her happiness into your hands. Can you not afford to appreciate it? Can you afford not to appreciate it? Wait. Wait until her maidenly agitation over the change from girlhood to wifehood has had time to spend itself. until timid modesty has had time to recognize her divine right to have you, and be had of you, for all the happy hours of day and night. Wait until your mutual occupancy of the same room and the same pillow has passed from the new, strange, awkward, dreaded thing it is sure to be at first, to that dear delight of heart lost in heart which is the most precious thing on earth. Wait until your encircling arms are to her the outer boundary walls of perfect rest, and joy, and love. And then? Well, you know that untried pathways are always trying pathways. And her feet are such timid, tender feet. you do to make her happiness complete? Stop whenever the limit of her desire is reached. Stop whenever dread or hesitancy would make her fearful. Stop at the frontier line of pain's most hateful domain; it will retreat steadily before you as time goes on, till lost in the distance. Stop before physical exhaustion of yourself turns daylight out of the world to your jaundiced mind, and leaves the wife with but half the husband she bargained for. So doing you will win the fullest enjoyment, the fullest love, the fullest life.

The quaint words of Jeremy Taylor should be every husband's rule of life: "The dominion of a man over his wife, is no other than as the soul rules the body; for which it takes a mighty care, and uses it with a delicate tenderness; and cares for it in all contingencies, and watches to keep it from all evils; and studies to make for it fair provisions, and very often is led by its inclinations and desires; and does never contradict its appetites but when they are evil, and then else not without some trouble and sorrow; and its government comes only to this, that it furnishes the body with light and understanding. The soul governs because the body cannot else be happy; but the gov ernment is no other than provision."

Again, speaking of rules for married persons, he says: "In their permissions and license, they must be sure to observe the order of nature and the ends of God. He is an ill husband that uses his wife as a man treats a harlot, having no other end but pleasure. Concerning which our best rule is, that although in this, as in eating and drinking, there is an appetite to be satisfied, which cannot be done without pleasing that desire, yet since that desire and satisfaction was intended by nature for other ends, they should never be separate from those ends, but always be joined with all or one of these ends, with a desire of children, or to avoid fornication, or to lighten and ease the cares and sadnesses of household affairs, or to endear each other; but never with a purpose, either in act or desire, to separate the sensuality from these ends which hallow it.

"Married persons must keep such modesty and decency of treating each other that they never force themselves into high and violent lusts with arts and misbecoming devices; always remembering that those mixtures are most innocent which are most simple and most natural, most orderly and most safe. It is the duty of matrimonial chastity to be restrained and temperate in the use of their lawful pleasures; concerning which, although no universal rule can antecedently be given to all per-

sons, any more than to all bodies one proportion of meat and drink, yet married persons are to estimate the degree of their license according to the following proportions.-1. That it be moderate, so as to consist with health. 2. That it be so ordered as not to be too expensive of time, that precious opportunity of working out our salvation. 3. That when duty is demanded, it be always paid (so far as in our powers and election) according to the foregoing measures. 4. That it be with a temperate affection, without violent transporting desires or too sensual applications. Concerning which a man is to make judgment by proportion to other actions and the severities of his religion, and the sentences of sober and wise persons, always remembering that marriage is a provision for supply of the natural necessities of the body, not for the artificial and procured appetites of the mind. And it is a sad truth that many married persons thinking that the floodgates of liberty are set wide open, without measures or restraints (so they sail in the channel), have felt the final rewards of intemperance and lust by their unlawful using of lawful permissions. Only let each of them be temperate, and both of them be modest. Socrates was wont to say that those women to whom nature hath not been indulgent in good features and colors should make it up themselves with excellent manners, and those who were beautiful and comely should be careful that so fair a body be not polluted with unhandsome usages. To which Plutarch adds, that a wife, if she be unhandsome, should consider how extremely ugly she should be if she wanted modesty; but if she be handsome, let her think how gracious that beauty would be if she superadds chastity."

Yet more quaint are the words of Chaucer: "An for that many a man," he says, "weeneth he may not sinne for no lecherousness that he doth with his wife, certes that opinion is false; God wot a man may slay himself with his own knife, and make himself drunk with his own tun. Man should love his wife by discretion—patiently and temperately. * * * *

"Then shall man understand that for three things a man and his wife may fleshly assemble (come together). The first is in intent of engendure of children to the service of God—for certes that is the cause final of matrimony, for neither of them has power of his own body. The second cause is to yield every of them his debt unto other of his body. The third is to eschew lechery and villany. The fourth forsooth is deadly sin. * * * Understand that if they assemble only for amorous love, and for none of the foresaid causes, but for to accomplish that burning delight, they reck never how oft, soothly, it is deadly sin; and yet, with sorrow, some folk will more pain them for to do, than to their appetite sufficeth."

It is said that the light of the fire-fly and glow-worm is the elfin call of the insect to its mate. What heart has ever known such degradation as to have other than the sweetest reveries over the building of the nest in the spring-time by the happily mated birds. May we gain such a conception of that sacred rite, which is the highest expression of love, the greatest physical delight, the presaging of the patter of little feet, and the prattle of baby tongues, that it shall be lifted up from the humiliation and debasement which have been heaped upon it, and be clothed upon with the royal purple of the heart's inner palace; gaining in our hearts an aspect of joy, of sweetness, of innocence, of purity, of which the robin's nest in spring is but the faintest type; a halo of softened light, beyond all comparison with the flickering taper of the fire-fly.

"By sweet experience know That marriage, rightly understood, Gives, to the prudent and the good, A paradise below."

Rightly understanding, we need not be in doubt lest, perchance, we do not possess what that somewhat wilful debator, Joseph Cook, calls "a supreme, adeqately tested affection." "Open the door of thy heart,
And open thy chamber door,
And my kisses shall teach thy lips
The love that shall fade no more
Till the sun grows cold,
And the stars are old,
And the leaves of the Judgment
Book Unfold!"

Do you fear adversity?

"What though there came the bitter days as well as sweet,
What though there came rough pathways unto weary feet,—
Naught could us sever.

Joined hand in hand, the husband and the wife,—Joined heart in heart, the sacred inner life,

Harmless the never and forever.

"Let civil conflict's most relentless blast,
O'er our two lives made one, attempt to cast
A shadow dreary,
And lo! no sooner is it come than it is dissipate,
So must it ever be, love always conquers hate,
And hearts are never weary!

"For clouds may come between us and the sun,
The sun himself may set and think the day is done,—
We smile together,
Sweeter than light of sun the light on Hymen's altar,
Nor cloud, nor setting, nor eclipse can make it falter,
Nor wintry weather!"

Do you fear that the frosts of time and of years will be chilting frosts? I look forward through the years of youth and prime to the coming of age. I see you sitting side by side. What is it that she is saying?

"John Anderson, my Jo, John, When we were first acquent, Your locks were like the raven, Your bonnie brow was brent; But now your brow is bald, John, Your locks are like the snow. But blessings on your frasty pow John Anderson, my Jo.

"John Anderson, my Jo, John,
We clamb the hill thegither;
And mony a canty day, John,
We've had wi' ane anither;
Now we maun totter down, John,
But hand in hand we'll go,
And sleep thegither at the foot,
John Anderson, my Jo."

And I hear you make reply:

"O, lay thy hand in mine, dear!
We're growing old;
But Time hath brought no sign, dear,
That hearts grow cold.
Tis long, long since our new love
Made life divine;
But age enricheth true love,
Like noble wine.

"And lay thy cheek to mine, dear,
And take thy rest;
Mine arms around thee twine, dear,
And make thy nest.
A many cares are pressing
On this dear head;
But Sorrow's hands in blessing
Are surely laid.

"O, lean thy life on mine, dear!
"T will shelter thee.
Thou wert a winsome vine, dear,
On my young tree:
And so, till boughs are leafless,
And songbirds flown,
We'll twine, then lay us, griefless,
Together down."*

^{*}Gerald Massey.

It should always be borne in mind that this highest physical expression of affection is a matter of real expense to the economy. Pressure is a mode of expressing attachment, but costs nothing physically, and may be repeated indefinitely. with this highest of expressions. It involves the pouring out of an expensive fluid, and the expenditure of a large amount of nervous force. Physically speaking, it costs; and it becomes at once a question of interest as to how often, in justice to the economy, this expense may be incurred. Turkish sanitary and marital law is said to fix the frequency of indulgence at once in seven days. Solon laid down the law at three times a month. Acton says: - "My own opinion is that, taking hard-worked intellectual married men residing in London as the type, sexual congress ought not to take place more frequently than once in seven or ten days; and when my opinion is asked by patients whose natural desires are strong, I advise those wishing to control their passions to indulge in intercourse twice on the same night. I have noticed that in many persons a single intercourse does not effectually empty the vasa deferentia, and that within the next twenty-four hours strong sexual feelings again arise; whereas, if sexual intercourse is repeated on the same night, the patient is able to so restrain his feelings ten days or a fortnight may elapse without the recurrence of desire."

The rule laid down here for the Londoner must not be taken thoughtlessly as the rule for the American also. Recalling the more sturdy and phlegmatic Englishman on the one hand, and the more nervous and high-strung American on the other; applying Dr. Acton's rule to the one, and deducing a proportionate rule for the other, you will arrive at a very fair estimate of that frequency which shall be consistent with the best mental and physical vigor. I am careful to lay down no rule which shall fix a definite number of days, and say that this is best for all men. For just so long as men differ in their physical make up, and in their surroundings and vocations, just so long must each

man be a law unto himself. Besides this, I speak only of yourself, and so deal with but half the question. I depend upon you to see to it that it is never allowed to drift into that hideous perversion which makes it a matter of one-sided selfishness. I charge you that you remember that it is always to be a mutual covenant, a mutual enjoyment; never a masculine debauch.

The consequences of excess in this matter are much the same in kind as those which follow the more unnatural perversions which are spoken of at length in the succeeding chapter. The difference lies in their more reluctant coming, less aggravated form, and more ready disappearance when the subject of them makes up his mind to "cease to do evil, and learn to do well." There is the same lassitude of mind and of body; the same intellectual and physical languor; the same dread in approaching, and feeling of incompetency for, any task of hand or head, developing into those nervous disorders which are the expression of combined irritation and exhaustion.

"In a considerable proportion of the cases of nervous breakdown which have come under my notice," says Dr. H. C. Wood, Professor of Nervous Diseases in the University of Pennsylvania, "the disorder has had its origin in matrimonial excesses. Intemperance in this regard rests as often in ignorance as in lack of self-control. Whether indulged in through want of knowledge or want of virtue, excess always brings the penalty in the shape of weariness, lassitude, loss of power to do mental work, and gradual impairment of nerve-force, which may progress until the man or woman is reduced to a condition of hysterical exhaustion. Sometimes excess seems for a long time to bear no evil fruits, until suddenly a serious organic nervous affection is developed. The danger from this source is especially real to brain-workers, as the robust man, who leads a life of activity in the open air, is far more able to resist. important point as to where the line is to be drawn between proper and improper indulgence must be settled by each individual for himself, with or without the aid of his physician. To phlegmatic persons, whose occupation is active, and whose work is largely muscular, greater latitude is allowable; but for the nervous student, great caution is necessary."

It is well to keep in mind that the greatest amount of pleasure is always to be found on the side of temperance. It is found there because a healthful, elastic body has the greatest possible capabilities for enjoyment; because the weak, dispirited, worn-out body, which is the inevitable result of that astounding frequency of indulgence which too often obtains, can respond but faintly to any pleasurable sensation. An exhausted body is almost sure to fill the heart with disgust, and the life with unhappiness.

Could there be drawn a more pleasing picture of the way of happiness and delight, than is this: "Let a man woo his wife, after the law has delivered her over to him, as assiduously as he did in their ante-nuptial days, until she yields willingly to his desires. When once this is accomplished, let him sink the husband in the lover again, and imposing on himself a strict continence perfectly compatible with the health of both, for a definite period, say a month at least, meantime woo his wife again. Let him resist temptation as conscientiously as in their unmarried days, and treat her with all the deference, consideration, and modest respect that he showed in those days. And he will find that each returning monthly marital conjunction will be fraught with greater delight than the sensualist, who indulges in daily or semi-weekly excesses, can ever dream of. Even if there should be occasional 'slips from virtue' in this married courtship, no one would have the right to say a word, and husband and wife would forgive each other out of the abundance of their mutual love."

No quarter should be given the sickly notion that a temperate life requires, on the part of husband and wife, the occupancy of separate rooms and beds. He is a poor excuse for a man whom

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reason cannot rule save as she puts him under lock and key. Beside, the married pair can ill afford to lose that complete opening of heart to heart which comes only under the sheltering wings of darkness, only with the confidences of a common pillow. Do not let a double calamity come upon you, and by the one act of fleeing to another resting place convict your manhood of cowardice, and deny yourself and wife the most intimate communings. Be temperate because it is right and reasonable, and therefore the best and largest life every way. temperate by your own force of character, instead of allowing yourself to be driven to the necessity of cutting off your right hand or plucking out your right eye to compel yourself to live a noble life. And let the rule laid down by Lallemand be the rule of your indulgences: "When connection is followed by a joyous feeling, a bien etre general, as well as fresh vigor; when the head feels more free and easy, the body more elastic and lighter; when a greater disposition to exercise or intellectual labor arises, and the genital organs evince an increase of vigor and activity, we may infer that an imperious want has been satisfied within the limits necessary for health. The happy influence which all the organs experience, is similar to that which follows the accomplishment of every function necessary to the economy."

As is well known, no sexual intercourse should be allowed during the time of the menstrual flow. But should it be forbidden during the existence of pregnancy also? A sharp difference of opinion has existed on this question. The physicians of some years ago, and the majority of those of the present day who are not physicians, are united in the belief that intercourse should be prohibited for the entire period which marks the duration of pregnancy, as being neither normal nor physiological. But I find no reason given in support of this belief, save that derived from observation of the habits of the lower animals. It is insisted that the beasts rarely cohabit during this time. In

answer it may be arged that it is very possible that the brutes do not set the pattern for mankind. The strong tendency of the sex impulse among them to confine itself almost entirely to certain times, remaining inactive and dormant for long intervals; and their promiscuous association, suggest differences of organization and habits which make them questionable as patterns set up to be followed by human beings and human society.

My own observation is that a moderate, gentle, careful sexual exercise is something which in no way exerts any undesirable influence upon the pregnancy which may be in progress. In fact it seems reasonable to suppose it positively helpful as calming any little irritation which might result from the absence of the ordinary exercise, and as tending to preserve unbroken the even tenor of the accustomed life at a time when the mind is peculiarly sensitive to any seeming coldness or indifference, to anything in the least degree unusual. But should it prove in the least painful, or disagreeable, or unwelcome, it would be sufficient proof, of course, that it should not be indulged.

This matter is not often discussed in medical circles, but now and then a doctor may be found putting himself down on the side of reason and of sense. Dr. Henry N. Guernsey says, "When pregnancy occurs it is in most cases more healthful and better for the expectant mother to allow intercourse at regular times, very gently, throughout her gestation." In the opinion of Dr. Geo. H. Napheys, "During those days when the wife, if she were not pregnant, would have been 'unwell,' marital intercourse should be abstained from. It is then injurious to the mother, and dangerous to the life of the child, as it is liable to excite miscarriage. But if this habitual epoch of the monthly sickness be avoided, there is no reason why passion should not be gratified in moderation and with caution during the whole period of pregnancy."

In short, those who oppose, and urge the example of the beasts, should be informed that the explorations of that sturdy

missionary, Dr. Livingstone, show their principles to have been carried more nearly to perfection in savage Africa, than any where else. His journal states:-"The women adjacent to Mozambique partake a little of the wild animals' nature; for, like most members of the inferior races of animals, they refuse all intercourse with their husbands when enceinte, and they continue this for about three years afterwards, or until the child is weaned, which usually happens about the third year. I was told, on most respectable authority, that many fine young native men marry one wife, and live happily with her till this period; nothing will then induce her to continue to cohabit with him; and as the separation is to continue for three years, the man is almost compelled to take up with another wife: this was mentioned to me as one of the great evils of society. The same absurdity prevails on the West Coast, and there it is said that the men acquiesce from ideas of purity."

Finally, what shall we say of children? And with what feelings should we look forward to their coming?

Two young men, both professed Christians, both the children of favored Christian homes, both having had more than average advantages of culture and education, both of proper age for marriage, both of unquestioned character, have, within a few days, volunteered to me their opinions as to the desirableness of children. One remarked that "When he got married he didn't mean to start an orphan asylum;" the other, that "If he ever got married he didn't mean to have any young uns." Representative young men as they are in all else, let us hope that in this sentiment they represent but a small class of young men. Yet the number is not small of those who look ahead toward a possible parentage with dubious misgiving; to whom the vision of prospective babies is a great drawback to marriage, rather than one of its best gifts.

I do not want to beg the question. I want to look at both sides of it with spectacles of precisely the same magnifying power.

I am no advocate of an unlimited and indiscriminate family. I believe with Jeremy Taylor that there are impulses other than that of desire for children, which may properly lead man and wife to that highest expression of affection. The creation of children and gratification of appetite are by no means its only The stamp of its subtle influence leaves permanent impress upon the individuals immediately concerned. perhaps not so easy of demonstration on the side of the husband; but in the case of the wife, the characteristics of her children long since called attention to it. Thus children by a second husband often bear a marked resemblance to the first. husband; and if the first child of a negress have a white father. succeeding children of a black father will be of lighter shade than would otherwise have been the case. Supposing that this apparently fundamental change might, after all, be referable to mental impressions merely, certain experimenters have pushed their investigations among the lower animals, using the utmost care to exclude mental causes, only to find that the persistent and unvarying results are altogether independent of sight and imagination. Among these observers is found no less a name than that of Darwin. And young people should be taught that when no children are sought, they still are not only gratifying an appetite and endearing themselves to each other, but, in an important and real sense, moulding each other as well.

Every young couple ought to know that conception is not likely to take place during that time which is bounded on one side by the twelfth or fourteenth day after menstruation, and on the other by the third day preceding menstruation. During this portion of the intermenstrual period, the occurrence of conception is the exception. Dr. Carpenter says in his Physiology,—"In all except about six per cent of cases, according to M. Rociborski, coition will not result in impregnation, if not performed until ten days after the cessation of the menses, nor within four days previous to, or during their occurrence.

Coitus immediately after or during menstruation, has often been advised as a cure for sterility, and frequently with success. Among the Jews, women are not allowed sexual intercourse until twelve days after menstruation; yet the women of that race are noted for their fertility. This is accounted for on the supposition that impregnation took place just previous to menstruation. When conception occurs at this time, the catamenia sometimes appear, and are sometimes absent; if they appear their duration is generally less than usual."

This time during which the occurrence of conception is improbable, and total abstinence, are the only legitimate regulators of the size of the family. Nor is the latter such an austere suggestion as might at first appear. The demands of appetite are not nearly so imperious within wedlock, as with the celibate. Neither is self-denial without its reward. Prolonged abstinence between the married has more than once been followed by the conception of men whom the world delights to call great.

All the so-called preventives of conception, avoid as you would the plague. They are sure to blast the health of husband, or wife, or both. Do not mistake brevity of statement for lack of emphasis. The statement is literally true, and it behooves you to take it to heart. All those manœvres which would cheat nature without giving her direct affront, deserve the name of conjugal onanism, and are sure to be followed by the same damage as is self-abuse, though the hurt will come less quickly, and will be less severe. While the more flagitious procedures are reckless bids for shattered health. Unaided common sense should teach any one that injections used to destroy the deposited semen are the direct means of intractible and distressing inflammations; -and for that matter, are but doubtful agents for accomplishing the desired end. Unaided common sense should teach that those rubber contrivances for gloving the male or female, which so infest the drug stores, and which leave

the organism half-satisfied and irritated, are sure to bring their just reward of rasped and broken nerves. "The condom is a cuirass against pleasure and a cobweb against danger," is the dictum of the great French surgeon, Ricord.

For the sake of your own happiness shun all these devilish contrivances. That young man who said to me that "he didn't mean to have any young 'uns," avowed his purpose to sin against his own, and his wife's body. "There is a way that seemeth right unto a man, but the ends thereof are the ways of death." If we do not live naturally, in accordance with nature, -if we attempt to cheat her in any way, we must take the penalty, without the hope, even, of escape through a capricious jury or an erratic judge. But this is only the physical sin. How much you sin against yourself in the withering of that character which should have been kept full, and sweet, and symmetrical, and tender, by the twining of dimpled arms about your neck; how much you sin against her who is ordained mother of mankind, when you deny her aught but the pitiful little dolls to which in infancy her heart went out, it is not for me to say. Yet I do not desire that children be born into your home for these reasons, for then would they be born into your home and not into your heart at the same time, and this is the birth of a bastard. Let no sense of duty, no fear of ill-health. no desire for the discipline of parentage, be the half-hearted call which brings the children flocking to your hearthstone. We must have something better than that. I do not forget the unpleasantnesses. I know that babies are apt to lie awake, and kick, and scream, at just that time which all the world has unanimously voted to sleep; and you wonder, exasperatingly, why in this instance the majority can't rule; that they are liable at any moment to return to the cold world the contents of their dear little colicky stomachs; that they are apt to be distressingly wet about their chins, not to mention other regions;

that in ways innumerable do they fill with despair the hearts of their bachelor uncles.

Now with softened footsteps go with me to an upper cham-By the dim light we see the tiny waxen form which was but yesterday the baby of the household. Over it bend the father and mother in the greatest grief that they have ever known. As you witness this scene does not the conviction force itself upon you that this life holds a love of which you know no more than the iron post to which you hitch your horse? Can you live in the world, and in endless variety of manifestation meet daily the unbroken testimony of fathers and mothers that they love their children above all else in the world, and not believe it? Will you say that all men are liars; that all men are trying to impose upon themselves in this matter? See too, how little difference it makes to them what the age may be. If they hance to be babies, then there is nothing on earth to compare with ne little ones. If they be boys and girls, then nothing can rival the charms of the "interesting age." If they be men and women, nothing can exceed the parental pride in that they are bearing the part of men and women. An old man said recently, speaking of his youngest child, just come to man's estate: had so many already, and were so poor, that we thought we had enough, and looked a little askance when another one came; but now I am sure I don't know what we could possibly do without Walter,"—for he was the support of his parents' declining days, their comfort and their exceeding great joy.

"Dick," said Abraham Lincoln to Gov. Oglesby, "remember to keep close to the people; they are always right, and will never mislead any one!" Are you not safe in trusting them on the subject of children? Do you believe that they are misleading you when they seem so bound up in their "treasures?" It need not alarm you that you cannot, in anticipation, feel as they do in realization. Trust that this flower of the heart will bloom within you also under the gentle influence of the warmth

and light of your own home. You cannot afford to have enter your soul the leanness which comes upon the childless man. Without them you will never know what a broad sympathy, or a tender heart, is. Without them you will never get a glimpse of the brightest side of life.

"To the end of time 'twill be still the same,
For the Earth first laughed when the children came!"

In the words of Theodore Parker: "I have heard a boorish pedant wonder how a woman could spend so many years of her life with little children, and be content! In her satisfaction he found a proof of her inferiority, and thought her but the 'servant of a wooden cradle,' herself almost as wooden. But in that gentle companionship she nursed herself and fed a higher faculty than our poor pedant, with his sophomoric wit, had yet brought to consciousness, and out of her wooden cradle got more than he had learned to know. A physician once, with unprofessional impiety, complained that we are not born men, but babies. He did not see the value of infancy as a delight to the mature, and for the education of the heart. At one period of life we need objects of instinctive passion, at another, of instinctive benevolence without passion." "It doesn't matter at all," says John Ruskin, "what Mr. So-and-So thinks of your work; but it matters a great deal what that bird is doing up there in its nest, or how that vagabond child at the street corner is managing his game of knuckle-down. And remember, you cannot turn aside from your own interests to the birds and the children's interests, unless you have long before got into the habit of loving and watching birds and children; so that it all comes at last to the forgetting yourselves, and the living out of yourselves, in the calm of the great world; or, if you will, in its agitation; but always in a calm of your own bringing. Do not think it wasted time to submit yourselves to any influence which may bring upon you any noble feeling."

The old women who culpably exalt the dangers of maternity, and the sight of married women who are faded and worn, often make the young husband hesitate at the thought of his wife becoming a mother. But the fact of motherhood is not responsible for the existence of broken down women. As a rule, mothers enjoy better health than the single and the childless. For the bearing of children is not a disease, it is the natural way of life; and when a young couple live properly and naturally, the young wife shows a development, physical and mental, which is as pleasing as it is wonderful. There need be no fear for her, for she will grow in health and beauty. The bearing and rearing of children is set down, by Dr. Holland, as "the most dignified, delightful, and honorable office of her life." When Madam de Stael asked Napoleon who was the greatest woman in France, he made answer, - "She who has had most children."

What say they of home and children who have had large fields of activity outside the home? Louise, Queen of Prussia, mother of the present sovereign, wrote thus to her father: "Gladly will you hear, dear father, that the calamities which have befallen us have not forced their way into our wedded and home life, rather have strengthened the same, and made it even more precious to us. The King, the best of beings, is kinder and more loving than ever. Often I think I see in him the lover and the bridegroom. Always showing more by his actions than by his words, I see the watchfulness that he has for me in all points. Only yesterday he said to me in his plain and simple way, looking at me with his true eyes: 'Thou, dear Louise! Thou hast become to me in misfortune still more precious and beloved. Now I know from experience what I have in thee. It may storm without, if only it remains fair weather in our wedded life. Because I love thee so I have called our latestborn little daughter Louise. May she become a Louise.'-This goodness moved me to tears. It is my pride, my joy, and

my happiness to possess the love and approval of this best of men; and because I heartily love him in return, and we are so united that the will of the one is also the will of the other, it becomes easy for me to preserve this happy union of sentiments, which has become closer with years. In a word, he pleases me in all points, and I please him, and we are happiest when we are together. Pardon me, dear father, that I tell this with a certain boastfulness. There lies in it the artless expression of my happiness, which interests no one in this world more deeply than you, dear, fond father! How to treat others; that, too, I have learned from the King. I cannot talk upon this subject, it is enough that we understand it. Our children are our treasures, and our eyes rest upon them with satisfaction and hope."

She who wrote that letter lived in the stormy days of the first Napoleon, and is famous for the courage of her encounter with him. It was she who filled all the thought of Blucher; and when, March 30, 1814, "after all the bloody contests on German and French soil, he led his victorious army to the heights of Montmartre, and saw beneath his feet the great capital of France conquered, he gave expression to his thought in the proud words, "Louise is avenged."

Young men should be warned that excessive use of tobaccomay show its damaging influence in the frames of puny babies; and that drunkenness is the father of idiots. It is said that Diogenes remarked to an imbecile, "Surely, young man, thy father begat thee when he was drunk." And in his "Anatomy of Melancholy," Burton makes the assertion that, "if a drunken man begets a child it will never likely have a good brain." And modern science endorses these opinions. But if you will eschew vice and live uprightly, you need not be anxious lest your children should not honor you. "The popular belief that a stupid son is the necessary sequence of a brilliant father is daily disproved, one of the latest instances being that of Waldo Story, the eldest son of the sculptor, W. W. Story. Graduat-

ing at Oxford some years ago, the young man at once adopted his father's calling, and has been studying and working in Italy ever since. Two of his works have recently been sent to the London exhibition, one of them, a 'Paris and Helen,' being a remarkably fine reproduction of the spirit and methods of classic art.'' "The Darwin family affords a remarkable illustration of hereditary genius. Mr. Darwin's father and grandfather were both men of great distinction as physicians, naturalists, and authors, and he leaves two sons that have already proved themselves able investigators—one as a physicist, and the other as a naturalist.''

Be confident that you are in the best and safest way when you put yourself in the center of the divinely appointed family. Stand not aloof and alone, but through the ministry of wife and children, join the great family of humankind. Be concerned to join that school which is the only one imparting a really liberal education. Be anxious that you may learn through parentage the thought of God toward you, just as through the flower you get a hint of His divine thought for beauty. In the language of Charlotte Cushman, "To me it seems as if, when God conceived the world, that was Poetry! He formed it, and that was Sculpture! He colored it, and that was Painting! And then, crowning work of all, He peopled it with living beings, and that was the grand, divine, eternal Drama!"

Though children may be "cheap at the price of pain and sickness, and care and toil," yet let me tell you that you have exaggerated the discomforts of baby days. A baby's business is to eat, sleep and grow. A well baby is not a cross baby. It is not the habit of the child-mind to be unhappy. Even teething is a physiological process; not a disease. John Hunter said, "Give children plenty of milk, plenty of sleep, and plenty of flannel." That saying is worth more than all the chamomile tea and soothing syrup which misguided parents have poured down helpless infant throats since the world began. A

thoroughly healthy baby is a happy, entertaining, welcome member of the home circle. And under intelligent care, the baby is more certain to maintain exhuberant health, than any other member of the household.

Do you say that your treasure will never be safe from the envious hand of Death? Is it not "better to have loved and lost than never to have loved at all?"

"He is not worthy of the honeycomb
That shuns the hive because the bees have stings."

Can you tell me how many fathers have been led up toward the best things of which they were capable, by the "touch of a vanished hand"—the soft hand of a child?

"How far, how very far it seemed,
To where that starry taper gleamed,
Placed by her grandchild on the sill
Of the cottage window on the hill!
Many a parent heart before,
Laden till it could bear no more,
Has seen a heavenward light that smiled,
And knew it placed there by a child;
A long-gone child, whose anxious face,
Gazed toward them down the deeps of space,
Longing for the loved to come
To the quiet of that home."

Not a few men hesitate to become fathers because they do not see how they could give their children a start in the world. They are poor men, and unknown men; and, with a family to take care of, do not see but that they must remain poor and unknown. They cannot endow their children with either money, or the prestige of a great name. I would remind all such that an old-fashioned book says that "A good man leaveth an inheritance to his children's children;" that from out of the iron-like organization of society in Great Britain, Archbishop Whately could say, "The man who gives his children habits

of industry, provides for them better than by giving them a fortune;" that Garfield could answer from this side the Atlantic, "Poverty is uncomfortable, as I can testify; but nine times out of ten, the best thing that can happen to a young man is to be tossed overboard and compelled to sink or swim for himself. In all my acquaintance, I never knew a man to be drowned who was worth the saving." In other words, poverty is a noble inheritance. It is the best of legacies. "Virtue and a trade are the best portions for children," said George Herbert. He could not have spoken more truly.

It is said that old Dr. Kirk, of Boston, valued greatly the outlook from his study window. It commanded a view of the school yard, and its troups of rollicking children. May each one of us be true-hearted enough, as we stand at the window which looks out over our plans and hopes for life, to see with unspeakable delight the fairy faces of our children yet to be. For,

"To make a happy fireside clime
To weans and wife,
That's the true pathos and sublime
Of human life."

And as the future melts into the present, may the hope be swallowed up in the reality; until,

"When the lessons and tasks are all ended, And Death says 'The school is dismissed," May the little ones gather around me To bid me good-night, and be kissed,"

And the wife? Ah, I have not forgotten her. She is more motherly than when I first knew her, and by just so much, more queenly and more my own. I shall never have done courting her. I have had many dear friends, but she is incomparably dear beyond them all. There is no spoken word which can tell what she is to me. "And now, as I close my task,

subduing my desire to linger yet, these faces fade away. But, one face, shining on me like a Heavenly light by which I see all other objects, is above them and beyond them all. And that remains.

"I turn my head, and see it, in its beautiful serenity, beside me. My lamp burns low, and I have written far into the night; but the dear presence, without which I were nothing, bears me company.

"O Agnes, O my soul, so may thy face be by me when I close my life indeed; so may I, when realities are melting from me like the shadows which I now dismiss, still find thee near me, pointing upward!"

CHAPTER VIII.

SELF-ABUSE.

Having passed in review the more important considerations relative to the reproductive function; and its physiological quiescence and proper exercise in man, it remains but to speak of the disorders affecting the generative system. Were these disorders due to stealthy contagion from without, like small-pox; were they the result of the inbreathings of any invisible miasm, like malaria; were they the direful fruits of the poisoning of earth's sparkling fountains, as is typhoid fever, I could take up my pen with an unburdened heart. not so. Yet not small-pox, nor malaria, nor typhoid fever, nor all three together, can claim a tithe of the victims which are offered up a continual sacrifice to this Moloch of all the centuries. And these victims are not the victims of disease. only disorders of this department of the economy worthy of note, are the penalties following remorselessly upon the violation of Nature's laws. It is transgression, not misfortune; it is vice, not disease, which breathes its poisoned breath into the nostrils of our boys and young men, and they become dead souls, drifting helpless, purposeless, within their shipwrecked bodies.

A solitary wreck is a sad sight enough; but the sea of life is covered with them, and its shores are strewn with them. Do you think that I exaggerate? Go ask any teacher in the public schools who is devoted and earnest in his work, and observant of the children in his care; go ask any true-hearted physician who is a man of experience, and you will only wonder that

teacher and physician do not wake the echoes of our streets with the cry of ancient time,—"Yet forty days and Ninevah shall be overthrown."

Do not ask me for statistics. I have not the heart to blot this page with them. I do not dare to say how many go to premature graves each year, through this sinful folly which eclipses all the other weaknesses of mankind. Come with me to the room where they await the burial. They lie side by side in solid phalanx, stretching away in every direction as far as we can see,—the innumerable host of a spectral army. With hands compassionate we turn gently back the sheet which hides their faces. Here is the face of hopeless idiocy, its pathetic vacancy softened by the kindly hand of death, for there is no knowledge nor wisdom, in the grave whither he has gone. Here is the upturned face which has been seamed, and scarred, and furrowed, and blistered by the most loathsome of all leprosies, its hideous deformity softened by the the merciful touch of death, for the mandate dust to dust reduces all alike to ashes. Here is the countenance of flushed and swollen passion, its maddened appetites, as painted upon lip and cheek and brow, more gentle made to seem by the cold finger of death, for its icy wrapping recks naught of earthly gratifications. Here is the face of suicide's despair, its haunting desperation calmed and stayed by death's mysterious presence, for its pulseless grasp knows neither hope nor fear. With gentlest touch of hearts that have grown very pitiful, we cover up the faces of the dead and pass out. "The little I have seen of the world, and know of the history of mankind, teaches me to look upon the the errors of others in sorrow, and not in anger. When I take the history of one poor heart that has sinned and suffered, and represent to myself the struggles and temptations it has passed, -the brief pulsations of joy, the feverish inquietude of hope and fear, the tears of regret, the feebleness of purpose, the pressure of want, the desertion of friends, the scorn of a world that has little charity, the desolation of the soul's sanctuary, and threatening voices within,—health gone, happiness gone, even hope that stays longest with us gone,—I would fain leave the erring soul of my fellow-man with him from whose hands it came." And then would I turn from the dead to the living, sounding the tocsin of alarm that shall awake them to the dangers which encompass, and pointing out the path of safety and the means of regaining it if already lost.

Understand, first, that the disorders of the reproductive system are divided into two great classes. 1. Those dependent upon solitary vice. 2. Those dependent upon illicit sexual intercourse.

1. By masturbation, onanism, or self-abuse, whichever term you may prefer, is understood the excitation of the reproductive mechanism by the hand, or other allied devices, for the sake of the pleasurable sensations thus induced. habit may be formed years before puberty, and continue indefinitely thereafter. At and after puberty, the culmination of the sensations thus aroused, is accompanied by a discharge of the This excitement of the reproductive sphere seminal fluid. being wilfully and continually provoked, there obtains an oversensitiveness to all that may excite; and the patient finds that the ordinary contact of society, the mere recurrence of an unclean thought, slight and accidental frictions, are sufficient to excite an erection and emission. More than this, dreams, and excitements, and emissions, begin to intrude themselves upon the hours of sleep with increasing frequency. By degrees the tone of the apparatus is lowered, until the discharge of semen takes place at any and all times, day and night, upon the slightest provocation, and without the accompaniment of any but the feeblest erection and the faintest sensation; and in the most advanced stages, both may altogether disappear.

This loss of semen in abnormal frequency, whether slight or in extreme degree, is known under the term, spermatorrhæa. It is but very rarely that spermatorrhoea is the result of anything save masturbation; and it is this infernal twinship of masturbation and spermatorrhoea which is blasting the health and withering the intellect of that class of our boys and young men who are virtuous in the ordinary use of that word, and to whom we look for the perpetuation of the bone and sinew of our Republic. In this we find that Nemesis which follows after our young men with sleepless vigilance, always and forever dragging them down from the best things of which they are capable.

I am thankful to say that the majority of masturbators have their eyes opened to the evil of the practice, and abandon it, before tasting its bitterest fruits; but the number of those who have been entrapped by the habit to a greater or less extent—who have the smell of fire upon their garments—is astonishingly great. One of the best surgeons in my acquaintance, a member of the dominant school of medicine, expresses the opinion that ninety-nine out of every hundred young men have more or less experience of this habit. I do not agree with him. I think his estimate too high; but I do not hesitate to affirm that the majority have sinned more or less in this direction.

I know that this will seem to many an appalling statement. To many it will seem the statement of a fanatic. To all such I can make but one reply. Understanding the difficulties in so doing, and exercising the circumspection necessary, investigate faithfully for yourself; and you will say that the half was never told. Garfield said;—"I never meet a ragged boy of the street without feeling that I may owe him a salute, for I know not what possibilities may be buttoned up under his shabby coat. When I meet you in the full flush of mature life, I see nearly all there is of you; but among these boys are the great men of the future,—the heroes of the next generation, the philosophers, the statesmen, the philanthropists, the great reformers and moulders of the next age." How often is the keen-eyed physician saddened by the knowledge that underneath these

coats are buttoned up shamefaced secrets in direct antagonism to all these possibilities of large worth and usefulness.

The physician sees these things with compassion, not with contempt. I do not trace these pages is one who would bring in a stern indictment against the youth. They have my high respect; they are a noble class. I think of them as sinned against, rather than sinning. If a child were not taught what it might put into its mouth, what to eat and what not to eat; if it were not led to discriminate between food and poison, and its life paid the penalty, public opinion and the law would take the matter in hand. But a son may become a mental and physical weakling, or go to the mad-house, or die the death of a suicide, for the lack of parental instruction which he has a right to expect, and the community sees in it nothing beyond an afflictive and mysterious Providence.

If any indictments are to be brought, they should be first against the doctors; for one who understands the subject and the successful handling of the disorder induced, is a rarity. doctors themselves as a class are at this point uninformed and unfurnished, and the youth who sincerely desires help and counsel, is far too often right in his conjecture that from the family physician he will get neither the one nor the other adequate to his need, and may quite possibly be met with an actual rebuff. Next in order of blameworthiness stand the fathers. they have learned in the hard school of experience, or otherwise, they never think of teaching their sons, that their feet come not into slippery places. They wave no red light across this downward track of all others the most travelled. leave unsprung the traps set for youthful ignorance and indiscretion. As well trust to your boy's intellect to teach him that fire-arms are dangerous, as to trust to his innocence to keep him from physical excesses. Whatever your theories may chance to be of what, in the nature of things, ought to be, the great insurmountable fact remains that you must pound it into

your otherwise bright boy, with precept upon precept, that guns carelessly handled go off and kill people; and strange as it may seem to your fond paternal heart, your boy has been born into a world of sin and suffering, and guileless and innocent as he may appear in your eyes, you must teach him purity, teach him manliness, teach him moral, mental and physical self-control. You must teach him not to fill his stomach with the green apples of the orchard, nor fill his heart and poison his body with the deceptive apples of Sodom.

If any blame attaches to the teachers, it is to those of private, rather than to those of public schools. Teachers of private schools are very careless in the matter of solitary vice among their boys, apparently taking it for granted that, as they come from favored homes, there is no call for any supervision in this matter. The teachers of our public schools, on the contrary, seem to be very generally awake to the magnitude and gravity of the evil, and are faithful in doing all in their power to check it. It has been my happy experience to uniformly meet with intelligent and earnest response, whenever I have sought to avail myself of whatever knowledge of the matter might be gained from their superior opportunities for observation. One teacher of long experience writes;—

"I rejoice that your attention, as a medical man, has been called to this subject especially, and that an effort is being made by you to save the boys. May God guide, direct and assist you in your work, and may you be the means in His hands of doing much good to the many boys of our land, is my earnest prayer.

"This is indeed an extremely delicate and unpleasant subject. It is repugnant in all its bearings. Yet as this sin prevails to such an alarming extent, it becomes the duty of every Christian man and woman to speak against it, and without false modesty. I have so long desired and prayed that in some way I might be

the means of helping to lift the youth up to a higher, nobler, and purer life, that I dare not refuse this opportunity.

"In complying with your request, I will relate circumstances that have occurred during my teaching, though not occurring in any one school, county, or state. Much will be withheld, as the statements might seem incredible; doubtless some facts herein given can hardly be appreciated by those whose attention has not been called to the subject, or those who have had but little opportunity to observe the habits of small children. It must be remembered that a teacher's field for observation of children and youth, is quite unlike that of either a parent or physician. A medical man deals with these cases, more especially, at later periods in life, when health begins to fail. He is familiar with the results of this practice; but the beginnings, and earlier stages of masturbation, come more directly under the observation of the teacher than any other person.

"In many respects a teacher has a better opportunity than parents to watch the developments of children, and to note the mental progress and moral tendency of youth. From my own observations and experience in teaching, and in conversation with many other teachers, these views have been corroborated. I give it as my opinion that masturbation and sexual precocity are common among children; that the majority of parents are not aware of its prevalence; that a large proportion of parents give no instruction to their children. This is founded upon the fact that but few adults can say that, in early life, they had instruction upon this subject; and I might count upon my fingers all the children who have admitted to me that their parents had taught them that this was wrong.

"Also, that very small children, in learning the different parts of the body, will feel of the hands, toes, etc., and in this way discover their genital organs; and a tickling sensation causes them to continue the act, which, if permitted to be repeated, develops into masturbation as they grow older. That many

children learn this, when very small and innocent, by the contaminating influence of other children, there can be no doubt. That others are taught this by older boys and men, not innocent, there can be no doubt. But of another class of boys, what can be said? The Bible is the best text-book and code of morals, as well as guide to a higher life. In this we read, 'Lust when it is conceived, bringeth forth sin.' 'In sin did my mother conceive me.' 'The iniquities of the fathers shall be visited upon the children,' etc.

"In view of the prevalence of this vice and its sad effects, it is the duty of physicians to inform young men upon this subject, and to teach them some things young men ought to know, before the vigor of youth, and strength of manhood, is wasted. It is as much the duty of instructors of youth to teach the boys the value of the mind and how to preserve it, as it is their duty to develop the mind and store it with useful knowledge. Character is worth more than book knowledge. If the capacities of youth can be largely measured by pre-natal education, and their moral tendencies are influenced by inheritance, a great responsibility rests with parents. May God speed the day when the purity of secret life will be stamped upon the faces of the youth; and 'Holiness unto the Lord' shall be written in the hearts of the parents.'

Again I say that I cannot, in unmeasured terms, condemn the boy who fails to make the distinction between use and abuse. Keep clearly before your mind who it is that devised the reproductive apparatus, and made the accomplishment of its function the greatest of physical delights; that as the heart may be full of all uncleanness or the fountain of all that is worth living for, so this department has ministries of good as well as possibilities of evil. This is demonstrable even though we rule out children and the family. What is the effect of castration? "In most of these instances, and probably in all where the mutilation has been suffered when young, a decided effect

on the mental and moral character is observed. Eunuchs are proverbial for their cruel, crafty, unsympathizing dispositions; the mental powers are feeble; and the physical strength is inferior. They lack both courage and endurance, and supply their place with cunning and mercilessness. They prove, indeed, that in their want of that power which connects them with posterity, they have lost something necessary to the development of the best parts of their nature. This should teach us that it is a wise provision which stimulates our duty to the future by the reward of present pleasure."

This function and power, then, in its right possession, is a real means of grace to the boy and man, ennobling the character, and developing the real fibre within it. This possession comes to the boy in an imperceptible evolution and development, until he suddenly makes the discovery of his added powers. He may make this discovery by tuition or accident. It may be through the corrupt teaching of companions, or some one of an infinite number of possible accidents; just as a young man of admirable training has said to me since I began penning this chapter, while deploring his slight self-abuse for a brief period in boyhood. He said he had learned the habit at school. Not liking to ask to go out when he needed to empty the bladder, his hand would go into his pocket to help him "hold in," and so the discovery was made and the habit formed.

Uninstructed by parent or physician, the boy comes to a knowledge of his power, and of a means of indulging an appetite. His father may take him aside, and speak to him of the possibilities of public life and private enterprise, and confide to him his hope that he may become a man of affairs, and urge upon him that he make the best use of his time to the attainment of this end. But to take him aside and call his attention to the homes with which he is acquainted, and tell him of the hope that his home may be of homes the sweetest, that the

^{*}Dr. Naphey's "Transmission of Life."

noblest of wives may be its center, that the dimpled arms of fariest children may one day twine about his neck,—to show him where the dangers lie which may take all this from him, as well as his possibilities in business, or letters, or statesmanship, to urge him that he keep his manhood pure and undefiled, and worthy of all this,—to do this is an unheard of innovation.

Ah, Fathers, Fathers, you take your sons up into an exceeding high mountain, and show them all the kingdoms of this world; but fail to direct their gaze toward the little kingdom of heaven which this world contains, or to hint at the lurking devil which may take it from them. A single word of sympathy from those who know all the way, is worth so much to the boy to whom all is mystery and guess-work. As I write I see before me the image of a mother, and about the matchless mother-face there is a halo like that around the faces of the saints in the old master paintings, only it is so much more radiant that I wonder the old masters were so far from the reality. And she takes her wilful, curly-headed boy into her lap, and looking down into his eyes she tells him that she hopes that someday he will have the dearest little wife in all the world; and that if he grows up to be the man that she would have him be, she will envy that little wife. How little she suspects, as he slips down out of her lap, that her mother-faith has so far outrun her knowledge of the world, that she has given him an anchor which shall save him from shipwreck in deep waters, as the hurrying stream of life bears him toward pitiless reefs of whose existence she never even guessed.

Trust the boys that they be men in miniature, and that it is not meet that their innocence should, like that of infants, be measured by their ignorance, but that it should be instructed, and their nobility made twice noble by the confidence they feel that you have reposed in them. If the boy thinks at all, he knows that the possession of the power is proper, of the appetite is natural

and right. He has found a means of gratifying this desire. Uninstructed, it never occurs to him that this procedure will bring mental and physical disaster. Why should it? I confess that as a physician I cannot answer the question to my own satisfaction. With the expenditure of nervous force and valuable fluid constantly in view, I still cannot see an adequate cause for the effect. If the idea of the ancients, that the seminal fluid was composed of drops of the cerebral substance transmitted through the spinal cord, were tenable, and modern anatomy and physiology showed it to be the fact, if it were really a stillicidium cerebri, then the moral and intellectual decadence and physical deterioration would seem to have sufficient cause. But this is not the case.

Yet however we may question the cause, there is certainty, grim enough, regarding the effect. The boy, apprehending no danger, indulges in the practice of masturbation until the beginnings of the impending spoilation are upon him. The first noticeable change is a certain fugitive quality which seems to pervade the entire boy. Before, he was frank, open, always to be depended upon, and you felt that you knew him, and knew just where you would find him upon any given question or emergency that might arise. Now, you have a painful consciousness that you do not know him. Naturally quick and decisive, he is now sluggish and hesitant; from boldness, he has passed to a certain slinking manner unworthy the honorable name of timidity. He has dropped his natural gregariousness, and assumed habits of solitude, and his eyes have become dreamy. He meets nothing with the old time squareness of decision; in its place is an omnipresent furtiveness in look and gesture and carriage which leads you to think that some change is going on, and you are in doubt as to what the boy will "make of himself." Let me tell you that he needs your wisest, kindest fatherly sympathy and counsel, or he will make shipwreck of himself

"Sad as the effects," says one of the wisest teachers I know "of this evil are upon the children and youth physically, a much sadder view is presented when we closely examine its mental and moral effects. It is generally admitted by intelligent people that masturbation injures the minds of adults. May it not be equally true of small children, and its results as manifest? It is true there seems to be a premature development of mind in some cases,—may this not be regarded as an unhealthy condition.

"A physician is supposed to form his opinion of the secret life of a youth from his physical condition; but an observing teacher judges as quickly and correctly, perhaps, from the mental condition and moral tendencies. Let a teacher become once aroused upon this subject by marked cases of masturbation among the dear little ones; let her note the progress and development of these children through the different grades as compared with other children of equal ability, and she has the key which would unlock the mystery that hangs around many a darling son.

"A former pupil, over twelve years of age,—a dear good boy—was a source of anxiety to his parents in that, while he had more than usual natural ability, he failed to make proper progress. He was apparently in good health, though he lacked vitality; and at times was sullen and contrary. His mind seemed dwarfed, or strangely undeveloped, in many respects, for a boy of his age. In conversation with his parents the father remarked, 'I cannot understand that boy.' To the question, 'Did you ever inquire into his secret life;' the father replied, 'No, have you any idea that there is anything wrong in the life of my boy?' Being convinced that his mind denoted it, he soon found a way to the heart of his son, and sought to right a wrong that had been taught by older boys at school, some years before.

"There are but few people, comparatively, who can exercise

concentration of mind to any great extent; and fewer yet, perhaps, who have will-power sufficient to exercise self-control, even in small matters. This may be due, largely, to faults in our early training, or education. It is surprising, however, to what an extent youth, and even small children, may be drilled in school to fasten and hold the mind upon what they are doing, regardless of what is going on around them. Also the power of will—self-control—they will manifest by drill. Now when children, in a supposed normal condition, cannot be developed by daily drill to concentrate the mind, and exercise self-control, a doubt hangs over the secret life of that child. If one fails to detect anything wrong with the child, may it not be safe to allow the doubt to hang over the purity of the lives of the parents?

"In one case, where a child seemed to exercise but little strength of mind during these drills, I was informed that the mother, prior to the birth of this child, had resorted to drugs as a means of abortion but failed in her purpose. In cases where there is a manifestly impure, corrupt tendency on the part of parents, who use obscene language, enjoy telling and listening to low stories, etc., it is safe to allow a doubt to hang over the lives of such parents. Could they carefully watch the developments in little children just from their homes—their mothers' arms—they would realize and appreciate these statements as in no other way, and would feel a deeper responsibility in regard to purity of thought and act. As with adults morally, so with youth, the tendency is ever downward. Becoming indolent and idle. 'Satan finds some mischief still for idle hands to do.' The powers of self-respect and self-control are weakened. They easily yield to temptation; and unless rescued while young, many a boy will be beyond the power of human influence, such is the demoralizing tendency of this practice."

Harshness and severity will be worse than useless. Some one has wittily said that we punish our children for their resem

blances to ourselves. Your boy may have inherited a disproportion of nerve and muscle from yourself, and have, therefore, less ease of self-control and greater liability to suffer from excess. Deal gently with him, and be vigilant, for the danger is great. If this thing goes on, he will drift into any form of nervous disease to which he happens to be liable. "In his classical writings on Diseases of the Spinal Cord, Erb declares that sexual excesses and irregularities occupy a prominent position in the predisposition to, and production of, many spinal affections, among which may be mentioned spinal irritation, neurasthenia, chronic meningitis and myelitis, softening, and inflammation of the anterior horns, or polio-myelitis; and this view is held by many other distinguished authors, as Rosenthal, Hammond, and Romberg.* Dr. Hammond+ mentions venereal excesses as a cause of suppurative inflammation of the brain, spinal congestion, spinal anæmia, spinal hemorrhage, spinal paralysis of adults, progressive locomotor ataxia, non-inflammatory softening of the spinal cord, epilepsy, hysteria, and catalepsy. Dr. Hartt makes the same mention regarding the causes of epilepsy, chorea, catalepsy, general paralysis of the insane, progressive locomotor ataxia, neuralgia, neuralgia trigemini, sciatica, angina pectoris, gastralgia, spinal irritation, hypochondriasis, melancholia, mania, and dementia.

Take, for instance, epilepsy. But few realize to what an extent masturbation is responsible for the epileptiform spasm. Dr. Hammond tabulates five hundred and seventy-two cases as coming under his own observation. Regarding the age at which it appeared, his table reads:

Under ten years, -	-			-	60
Between ten and twenty	y years	, -		-	329
Between twenty and for	ty-five	years,	-	-	143
Over forty-five years,		•"	-	-	4 0
m					
Total	-	• •		-	572

^{*}Gross. †Diseases of the Nervous System. ‡Diseases of the Nervous System.

"It is thus seen that the period of life between ten and twenty years, is that at which epilepsy is most apt to occur. The experience of others is to the same effect." Is not this showing suggestive? Remembering the difficulty of getting at this cause, look at his table of causation. I find first, that no exciting cause could be assigned in 177—draw your own conclusions. I find 35 set down to fright, 17 to anxiety, 30 to grief, 48 to over-mental exertion, 21 to dentition, 33 to indigestion. What was the matter with the ancestors of these victims, that they transmitted to their offspring such shattered nervous systems as to be thrown into epilepsy by such causes as these? Think of the physiological process of dentition being a cause of 21 cases. Verily, the fathers have eaten sour grapes, and the children's teeth are set on edge.

But to go on. I find charged up to venereal and sexual excesses 60, to syphilis 13, to other derangements of the reproductive apparatus 56, while blows on the head, and other wounds, falls, sunstrokes, scarlet fever, measles, diptheria, malaria, etc., divide the remaining 82 cases between them. Comment is superfluous. Dr. Hart places self-abuse first in his enumeration of the most common exciting causes. An able physician, ex-professor in one of the best medical schools in this country, says, in a recent letter to the superintendent of an insane asylum; -"I have recently cured a case of epilepsy, in a lad of three years of age, due to masturbation. At least he performed all the tactics of that manual." This is, of course, a case of sexual precocity. The child should be conscious of no such function. But, unfortunately, such precocity is not rare. An honored and veteran teacher gives this testimony;— "The prevalence of masturbation and sexual precocity among children, is much more common than is generally believed.

"If a journal in full had been kept, of the many cases of masturbation and sexual precocity which have come to my knowledge while teaching, together with conversations I have

had with children and youth upon this subject; also peculiar developments in children in these respects, it would be quite a large book of itself.

"I could hardly have believed from the lips of another, what I have witnessed among children in school. There is probably no school of any size without more or less of this evil among the pupils. It has been suggested by teachers that it might be an epidemic, for if one open, bad case is seen and known, it spreads like wildfire. I have taught a term, yes, a year, with but little trouble in this respect among the pupils. Again, in the same building, same grade of pupils, it has been so prevalent that one could hardly fail, if looking for it, to detect one or more practicing this evil in school. I have witnessed in a school of sixty, whose average age was under six years, fifteen pupils practicing masturbation at the same moment in school.

"A teacher who had taught successfully in first primary schools for several years, said to me one day, after her attention had been called to this subject, 'I must quit teaching. I can now detect this evil in school every day. The responsibility is greater than I can bear.' Shortly afterwards one little boy from her room died in spasms.

"This vice may be practiced in the presence of teacher or parents and the child not observed by them, unless they are awake to the importance of protecting the little ones from an impure secret life. After teaching several years, I was startled to find that, little innocent children, just entering school, had already commenced a practice which might result in their ruin. The construction of pants for small boys is such that they can easily practice this openly. Older boys are more sly, but an observing teacher who has noticed the little ones, can easily detect them.

"Still older boys resort to the privies and back yards. Have known boys to habitually remain after school and play in this way, until it came to the knowledge of teachers. Just here let me say that the out-buildings at school may be regarded as positively unavoidable nuisances—sinks of iniquity—where obscene language is used, low stories told, masturbation taught, and in many instances, sexual intercourse is practiced.

"A pupil just entering the teens, whose first lessons had been learned in an out-building at school some years previous, was asked, 'How many times a day do you practice solitary vice?' The reply was, 'I have often done it four times in one day.' This child was a Sabbath school pupil—from a Christian home,—an intelligent and intellectual family. It is a mistaken idea that this practice is confined to low families. Many instances might be given of children addicted to this habit, from the best of Christian homes.

"A teacher who realizes her responsibility to a 'higher law,' as well as that of the common school, will listen to some sad tales from her pupils, if she seeks to enter into their hearts and help them to abandon bad habits. One will tell of an own uncle who taught this, while the child sat upon his knee, at home. Another, of a hired man's teachings, while the parents were away and the child, at the time, about four years old; and that ever afterwards it had been a secret sin, although unknown to the parents. This last circumstance was related by a child just entering the teens. To the question, 'Do you know this is wrong?'-the reply was, 'Yes.' 'Who told you it was wrong?' was then asked. 'Nobody.' 'Then how did you learn it was wrong?' 'Well,' said the child, sobbing, 'one day at home I was out in the privy doing this, and I had done it so many times that day—all at once something seemed to tell me 'Thou God seest me,' and I always felt it was wrong after that.

"One child, twelve years old, gave the names of nineteen children who practiced masturbation, and some of them had had sexual intercourse with their sisters. Have known many instances where children have had sexual intercourse—this gen-

erally takes place at home—and several instances where this was true of children under five years of age; a few cases where boys have attempted to force little girls. I once asked a child whom I knew had had sexual intercourse, how they made known their desires to each other. The reply was, 'We say, let's go out to the barn and do it.' Children who talk these things over together, know what is meant by 'it.'

"Some small children are very sly in the practice of masturbation, and can only be detected by general appearances; but they will confess much that is done at home of which the parents are unaware. Others, one can hardly fail to observe if awake to duty. One of the worst cases I ever knew was a boy about six years of age. He would write numbers with one hand on his slate, and the more absorbed he became with his lessons, the faster he would excite himself with the other hand. was done openly, in view of any one who chanced to be in the room. I have seen him so excited he could not sit on his seat, and in all manner of writhings; yet apparently studying all the time. You could go to him and observe every position and emotion, and he so absorbed and excited as to be wholly unconscious of your presence. I have had him stand out on the floor facing the school; hoping, at least, to arouse his pride until some other power or influence could be brought to bear upon him-but the result was the same. I saw his mother; had her close the opening in his pants; but he soon made another. Every moral influence that could be thought of by superintendent and experienced teachers, was tried. But without success. In the higher grades, he was one of those restless, wayward boys, who cause a teacher so much care and anxiety.

"Let a teacher listen to the sad tales of children, and find a few such cases as this, in school, with pupils whom she dearly loves, and she will awake to duty and responsibility as never before. She will seek for the cause of this and the possible prevention. She will note the effects, physical, mental, and

moral; and there will be moments, in view of eternity, and her powerlessness to rescue the children and youth, when in her inmost soul she will cry out to the Living God, 'Is there no balm in Gilead; is there no physician there?'"

No work has held a more honorable place in medical literature, than Dr. Watson's Theory and Practice. His testimony is; - "There are certain vices which are justly considered as influential in aggravating, and even in creating, a disposition to epilepsy; debauchery of all kinds; the habitual indulgence in intoxicating liquors; and above all, the most powerful predisposing cause of any, not due to inheritance, is masturbation—a vice which it is painful and difficult even to allude to in this manner, and still more difficult to make the subject of inquiry with a patient. But there is too much reason to be certain that many cases of epilepsy owe their origin to this wretched and degrading habit, and more than one or two patients have voluntarily confessed to me their conviction that they had thus brought upon themselves the epileptic paroxysms for which they sought my advice." And Dr. H. C. Wood is but too true when he says; -"The history of epilepsy is but too often that of a slow but irresistibly progressive failure of mental power, until it may be the boy disappears in the gloom of the idiot asylum, finally to die of a pneumonia or a fever."

Understand that neither the presence of epilepsy, nor any of the other disorders enumerated, is necessarily an evidence of masturbation. Far be it from me to fasten any such stigma upon the unfortunate victims of disease. Mahomet was an epileptic, yet his great career was the farthest possible remove from that of one guilty of self-abuse. So long as a single case is to be found, due to other causes, you have no right to look upon any sufferer and say within yourself that here is a guilty one. Strive that those in your care may be kept from evil; but do not go about asking the pharisaical question, "Who did sin, this man or his parents?"

Take insanity, that most perfect type of blasted manhood. Does there exist any relation between it and masturbation? Where does self-abuse, carried to its final development, leave its devotee? Insanity is the most dread disorder to which mortal man is liable. Does masturbation ever carry him to this frightful ultimatum? Let us examine carefully the testimony of observation and experience upon this point; for, insanity being the extremest expression of the disease liability of man, and the greater always including the less, if it be shown that selfabuse frequently ends in insanity, there will be no need of expending time in the citation of facts and figures proving it to be potent in the causation of almost every minor disorder. That would be a necessary deduction.

What, then, do we find the testimony to be regarding insanity? Dr. Gershom H. Hill, Superintendent of the Iowa Hospital for the Insane at Independence, in an opinion kindly given me, writes;—"Masturbation always injures the mind, and frequently is an important factor in producing insanity."

Dr. Samuel Worcester says;—"Probably to the unprofessional mind the habit of self-abuse or masturbation would at once suggest itself as a fruitful cause of insanity, as is indeed the case. All alienist physicians bear evidence to the power and prevalence of the pernicious habit. No vice can be more easily initiated, none can be eradicated with greater difficulty. It is, however, true that a great difference of opinion exists among authors as to the frequency with which this habit should be considered a cause or an effect of insanity; a difference of opinion due in part to the difficulty of obtaining trustworthy evidence from the patient or his friends."*

Dr. A. E. Small, President of one of Chicago's medical schools, says;—"Bodily diseases alone are quite enough to utter a warning to the onanist. But they are trifling when compared with the awful consequences upon the soul. The

^{*}Insanity and its Treatment,

mind succumbs, childishness and imbecility are its attributes, and he becomes a moral monstrosity; thank heaven, monsters cannot propagate, neither physical nor moral, for manhood is gone, virility destroyed, and the vessel is a complete wreck in the sea of human infirmities.

* * * One-tenth of all the inmates of our insane asylums are of this class of secret sinners, who still continue the vile habit of self-abuse, though brought to spiritual and moral bankruptey. Insanity, hallucinations, loss of sight and hearing, in a moral point of view form the climax, characteristic of the consequences, and withal these idiotic victims of sexual abuse embrace every secret opportunity to instinctively cultivate and practice the vile habit of onanism."

The late Dr. John Ware, of Boston, of whose worth no one needs to be reminded, wrote; -- "Among the effects of this habit, in ordinary cases, we notice an impaired nutrition of the body; a diminution of the rotundity which belongs to childhood and youth; a general lassitude and languor, with weakness of the limbs and back; indisposition and incapacity for study or labor; dullness of apprehension; a deficient power of attention; dizziness; headaches; pains in the sides, back, and limbs; affections of the eyes. In cases of extreme indulgence, these symptoms become more strongly marked, and are followed by others. The emaciation becomes excessive; the bodily powers become more completely prostrated; the memory and the whole mind partake in the ruin; and idiocy or insanity, in their most intractable forms, close the train of evils. It not unfrequently happens that, from the consequences of this vice when carried to an extreme, not even repentance and reformation liberate the unhappy victim.

"Let no one say that we overstate the extent of this evil, or exaggerate its importance to the health and morals of the young. It is in vain that we attempt to stay the licentiousness

^{*}Decline of Manhood.

of youth, when we leave, unchecked in their growth, those seeds of the vice which are sown in the bosom of the child. If there is impurity in the fountain, there will be impurity in the stream which flows from it. To what purpose is it that we make and execute laws against open licentiousness; that we arm ourselves with policemen and spies; that we prosecute the keepers of brothels; that we hunt the wretched prostitute from the dram-shop to the cellar, from the cellar to the jail, from the jail to her grave? This does not purify society; it stops merely one external development of a corruption which still lurks, and cankers, and festers within. The licentiousness of the brothel is clear and open in its character; nobody defends it; every one is aware of its seductions and its dangers; the young man who enters the house of shame knows that he does it at the peril of reputation, and under the dread of disease. But the otherform of licentiousness is secret from its very nature. It may be practiced without suspicion; there is little fear of discovery or of shame. It lurks in the school, the academy, the college, the workshop, ay, even in the nursery. No age and no profession are without examples of the dreadful ruin it can accomplish. Begun in childhood, and sometimes even in infancy, it is indulged without a thought of its nature or effects. Gradually it winds around its unhappy victim a chain which he finds it impossible to break. Continued for years, he may wake, at last, to a sense of his degradation, but perhaps toolate; for it has often happened that neither the pressure of disease, the stings of conscience, a strong sense of religious obligation, nor even the fear of death, have been sufficient to enable the unhappy sufferer to break from the habit which enthralls him.

"None but those who go behind the scenes of life, and are permitted to enter the prison-house of the human heart, can know how many are the terrible secrets which lie hid beneath the fair and even face of society, as we see it in the common

intercourse of the world. With how many are their early days a struggle for life and death between principle and passion, the spirit and the flesh! With how many are those days spent in yielding and repenting, in reluctant indulgences followed by agonies of remorse and shame! With how many does the conscience become callous, and vice a second nature! How often has it happened that natures, really fair and pure, have gradually become tarnished and dim, and the highest hopes of youth been defeated! How often has it happened that young men of rare promise, of whose success great expectations have been entertained, have suddenly failed by the way, have seemed prematurely worn down by study, and forced to relinquish the career on which they were entering with the brightest prospects! Little is it suspected by anxious friends, or a sympathizing public, in such cases, that it is not too exclusive devotion to study, that it is not midnight toil; that it is not errors of diet, or want of air or exercise, that have withered their energies, and unnerved their frame. There may be a nearer and a more inevitable destroyer than these."*

My friend, Dr. Seldon H. Talcott, Superintendent of the New York State Asylum for the Insane, at Middletown, writes;— "It affords me pleasure to aid you as far as possible in your commendable work of issuing a warning to young men against the dangers of masturbation. Masturbation plays a prominent part in the causation of insanity; its tendencies are toward the weakening of the mental faculties, and the introduction of dementia. tistics I refer you to my reports. By these reports you will learn that masturbation stands among the first three or four causes of insanity. These causes have been carefully investigated."+ In an article from his pen in a

^{*}True Relation of the Sexes. †From these reports I glean the following.—I find in the report dated January, 1878, that the total number of males admitted within the year was 43—that in the table of causes 13 are set down as unknown, 7 as due to mastur-

recent number of a medical journal, this statement is made;—
"A final cause inducing the insane diathesis lies in that growing and deplorable social malady—the premature and excessive excitement of the sexual organism. It is scarcely needful to argue the fact that masturbation is alarmingly prevalent among the young. The books are full of printed proofs; and the appearance of the young, in our schools and on the streets, is an open page of the most indisputable evidence. Most of the insane in asylums, who are yet adolescent, present histories and marks of this damning practice."

In notes furnished by himself, of his lectures before a Philadelphia medical class, he says;—"Masturbatic dementia is the result of that prevalent, brain-destroying vice, familiarly known as 'self-abuse.' * * * Cases of masturbatic dementia are usually intractable. They must be cured, if at all, during the incipient stages of the disease. The victims are frequently robust in physique, at least until they become exhausted by long practice of the vice which so surely wrecks the mental forces. * * These persons often profess a great love for books. They retire to their rooms or to some secluded forest shade, ostensibly for purposes of study, but in reality to indulge in lecherous imaginations, lewd thoughts, and peccant practices.

"Dull-eyed and dreamy students, who prefer their bedrooms to the play ground, may almost always be suspected of onanistic habits." Again, in another journal;—"There is this to be considered, in our treatment of masturbatic insanity, that cases of this sort which reach an asylum are usually so fargone in their terrible ways as to be non-amenable to any treatment."

bation, while the next highest number attributed to any single cause is 5, which is set down opposite "Heredity." In that year, after the unknown, masturbation headed the list in the number of its victims. In the 1879 report, there were admitted, males, 42. Causes, heredity and predisposition 11, masturbation 7—that year masturbation stood eccond on the list. In the 1880 report,—admitted, males, 67. Causes,—unknown 21, heredity and predisposition 14, masturbation 11. In the 1881 report,—admitted, males, 76. Causes,—unknown 15, heredity and predisposition 14, overwork 12, masturbation 9.

Dr. William A. Hammond asserts;—"Masturbation and sexual excesses are also to be placed among the etiological factors of insanity. In young persons, their influence is often decidedly manifested. Persons of mature age do not appear to incur, except as regards paralysis, any noticeable liability to mental derangement, unless they are practiced to an inordinate extent, and then they are probably the symptoms of an already existing mental disease. In youth, acute mania, melancholia with stupor, or more generally hebephrenia, are produced. Sexual excesses are, however, among the most common causes of general paralysis. On this point there is no difference of opinion among writers. In my own experience I have abundant evidence of its power as a factor in producing this disease."*

Dr. Roberts Bartholow says; -- "The most serious mental effects are produced by masturbation. This vice, commenced at the period of puberty, interferes seriously with the development of the brain and the evolution of the mental faculties. Several of the most characteristic cases which have happened under my observation correspond to the delusional insanity of Bucknill and Tuke. Many writers are disposed to underrate the importance of this tendency in sperma-To the influence of quack advertisements and popular works, which of course, greatly exaggerate the evils of this disease, is ascribed the melancholy, the hypochondriasis, and other mental disorders, which occur in the course of it. statistics of any of our large insane asylums well illustrate the influence of masturbation in the production of mental alienation. We have already given the opinion of Romberg on this point. Mr. Holmes Coote, in a discussion which followed Dr. Drysdale's paper on the 'Medical aspects of Prostitution,' read before the Harveian Society of London, remarked that he still entertained the opinion that there were worse evils

^{*}Treatise on Insanity.

appertaining to human weakness than prostitution. He had opportunities of witnessing the fact that among the young there was no cause of insanity more common than indulging in habits which he would not further particularize, but which were known to result in the most complete bodily and mental prostration.'

"Dr. John P. Gray, the distinguished Superintendent of the State Asylum at Utica, New York, thus speaks of the influence of masturbation in the production of insanity;—'The records of this institution show five hundred and twenty-one cases admitted directly attributable to this vice, and I am well convinced that the number is greatly understated.' We might add confirmatory testimony from a variety of sources, but the foregoing is sufficient for our purpose."

This is the testimony of the physicians of our own country. What do they of other countries testify?

Dr. T. S. Coulston puts himself on record in the Edinburg Medical Journal, as of the opinion that "the period of greatest danger of insanity in Scotland, is that of adolescence." the special department of insanity, weightier names cannot be found in Great Britain, than those of Drs. Henry Maudsley, and Bucknill and Tuke. Dr. Maudsley says ;-"The form of mental derangement produced by self-abuse—the Insanity of masturbation-furnishes a good example of a chronic mania in which there are no acute symptoms, the onset of the disease being most gradual. The patient becomes offensively egotistic; he is full of self-feeling and self-conceit; insensible to the claims of others upon him and of his duties to them; interested only in hypochondriacally watching his morbid sensations and feelings. His mental energy is sapped, and though he has extrav agant pretensions, and often speaks of great projects engendered of his conceit, he never works systematically for any aim, but exhibits an incredible vacillation of conduct, and spends his days in indolent and self-suspicious self-brooding. His relatives

^{*}Spermatorrhœa.

he thinks hostile to him, because they do not show the interest in his sufferings which he craves, nor yield sufficiently to his pretensions. As matters get worse, the general suspicion of the hostility of people takes more definite form, and delusions spring up that persons speak offensively of him, or watch him in the street, or comment upon what passes in his mind, or play tricks upon him by electricity or mesmerism, or in some other mysterious way. Still he professes the most exalted moral or religious aims. A later and worse stage is one of moody self-absorption and of extreme loss of mental power. He is silent, or if he converses he discovers delusions of a suspicious or obscene character, the perverted sexual passion still giving the color to his thoughts. He dies at the last a miserable wreck."*

Bucknill & Tuke's work on Insanity is standard wherever the English language is spoken. In it they say; -"To estimate with anything like accuracy the relation which Sexual Vice bears to insanity, requires considerable discrimination. ble facts are, of course, most difficult to obtain, and such figures reveal little of the real truth—the extensive mental mischief done-of which there can be no doubt whatever." Again, under the heading, "Insanity caused by Masturbation," they say; -- "Many years ago (1844) Dr. Luther Bell, of the McLean Asylum, Massachusetts, and Dr. Ray, pointed out in graphic terms this state of mental disorder as 'a form of moral insanity.' Sooner or later, however, decided delusions appear. The former described it as characterized by strong suspicions of threatened personal injury, of calumny experienced, of secret enemies, and analogous hallucinations, the patient at the same time evincing but little aberration in ordinary outward manner and conversation. 'This type of disease,' he says, 'is so peculiar that it and its presumed cause are most generally correctly recognized on the application to the Asylum for admission, and

^{*} Reynolds' System of Medicine.

before the patient is seen. The patient is committed with the strong anticipation that so slight a degree of Insanity can be readily and quickly removed. Vain hope! Experience shows just enough of recoveries in such cases to prevent absolute despair, and no more. Nay, more, the progress of the mind is commonly downward; more than in any other form of disease it is difficult to sustain the sufferer's self-respect, and to make him tolerably comfortable. Ordinary motives fall powerless upon him. If the delusions are few, the disposition is sulky, mischievous, and dangerous; if many, they are always irritating and distressing. The hallucinations of these sufferers almost always run in a peculiar channel; spirits or evil-disposed persons whisper through flues and walls, or at the distance of miles, suggesting everything which is outrageous and insulting; gases, and influences more etherial, are scattered around them to render their existence wretched; nauseous matters are placed in their food; their sleep is wantonly disturbed by gross personal outrages, and the like. They are subject to be driven tofury, and commit acts of violence, if some particular person isfixed upon as connected with their wrongs. They are also subject to impulsive acts of violence where no delusion can be presumed to have prompted them, and where, indeed, the patient, after the paroxism has passed, is unconscious of any delusion; he has committed the act of violence with no other explanation than that it crossed his mind to do it, and that simultaneously it was done. Motives act scarcely at all upon these sufferers, except fear; higher appeals are powerless.'

"Dr. Bell concludes this melancholy picture by expressing the opinion that (although the intellect is sometimes wonderfully little effected) the happiest thing that can happen for this class is to sink into dementia. 'Their own sufferings and those of their friends rarely have any earlier quiet.'

[&]quot;Schroeder van der Kolk has also well described this form of

mental disorder. 'If,' he says, 'one perceives in a young man a certain shyness, and an evasive and cast-down look, a dull irresolute character, which are soon accompanied by stupidity and confusion of head, and weakness of memory, then one must be mindful of this sad vice. In addition to this, there is an inconstancy of character and inconsistency of demeanor, according as the unhappy tendency is indulged without restraint, or as in some degree a check is put to it. The fear of man often arises; they think that every one on the way looks at them, complain of it, allow themselves to be misled by all kinds of suspicion and perverted imaginations. occur, moreover, fanatical notions and self-accusations, then we can have scarcely a doubt as to the cause. We find also, in general, an irregular circulation, the hands cool, yet bedewed with sweat, the head hot, especially the neck and back of the Biting of the nails, scratching of the finhead and vertex. gers, from which numerous hang nails arise, may occur in other forms of melancholy, but most frequently in this. The bowels are also sluggish. The dull look is, for the most part, quite characteristic. The diminution of the intellectual power passes at last into Dementia.'

"Lastly, Dr. Skae, describes this vesania in words which all familiar with it will admit to be eminently truthful. 'I think,' he says, 'that this vice produces a group of symptoms which are quite characteristic and easily recognized, and give to the cases a special natural history; the peculiar imbecility and shy habits of the very youthful victim; the suspicion, and fear, and dread, and suicidal impulses, and palpitations, and scared look, and feeble body of the older offenders, passing gradually into Dementia or Fatuity.'" Referring to the matter in another place they speak of "the fatal indulgence of his wretched pleasures." This is what Bucknill and Tuke say, and call in others to say for them.

There is no more standard authority on the functions and dis-

orders of the reproductive organs than Dr. William Acton. says; -- "That insanity is a consequence of this habit, is now beyond a doubt. The connection between insanity and extravagant sexual desire is alarmingly close, as appears from many modern investigations, especially with regard to the central portion of the cerebellum. Deslandes has remarked that, 'in proportion as the intellect becomes enfeebled the generative sensibility is augmented.' The subject has recently been thoroughly investigated by Dr. Ritchie, from whose able treatise, entitled, 'An inquiry into a frequent cause of insanity in young men,' I have condensed the following particulars;parent, after her son (the only child it may be) is taken to an asylum, will tell you that his insanity cannot be accounted for. He has been so well-conducted, so quiet and studious, not seeking the company of the gay, the idle, and the thoughtless, but remaining quietly at home rather than joining the social amusements of those of his own age. Further inquiry may elicit that he has been of good abilities, and it may be clever in his occupation; that he had few friends, and rather shunned the society of those of the other sex. Had he been other than he was. some cause might have been found in the irregularities of life to cause insanity in one scarcely beyond boyhood's years; but in such a quiet lad, and so carefully brought up, she is unable to suppose a cause. Then she may tell you that for some time past a gradual alteration has been going on; he has changed not only in manner but in appearance; he has become so peevish and irritable, so reserved in his conversation, so apathetic in manner, so slovenly in dress, so contradictory and so uncertain in his actions, so hesitating, first determining on one thing, and before he could execute that, changing to some other course. and has shown such a want of self-reliance. That quite recently he has grown more and more apathetic, more slovenly in dress. paying less attention to cleanliness, and becoming slower in his actions; that he is now not only irritable in his temper, but is at times violent; that he does things by 'fits and starts,' is impulsive, deliberating long, and then suddenly hastens appar ently to carry out his intention; and has become so stupid-looking and lost, and incapable of taking care either of himself or his business; and all this has occurred without any apparent cause, except it may be his 'studious habits.' At last he can be borne with no longer; he is unmanageable in a private house, and is obliged to be removed from his home.

- ""On entering an asylum for the insane, especially if it be one receiving patients from the middle as well as from the lower class of society, there is one group of inmates which may arrest the attention of the visitor from the contrast presented to the excited persons around him, on the one hand, and to those who are convalescent on the other. Engaged in no social diversion, the patients of this group live alone in the midst of many. In their exercise they choose the quietest and most unfrequented parts of the airing grounds. They join in no social conversation, nor enter with others into any amusement. They walk alone, or they sit alone. If engaged in reading they talk not to others of what they may have read; their desire apparently is, in the midst of numbers, to be in solitude. They seek no social joys, nor is the wish for fellowship evinced.
- "The pale complexion, the emaciated form, the slouching gait, the clammy palm, the glassy or leaden eye, and the averted gaze, indicate the lunatic victim to this vice.
- "Apathy, loss of memory, abeyance of concentrative power and manifestation of mind generally, combined with loss of self-reliance, and indisposition for a repulsiveness of action, irritability of temper, and incoherence of language, are the most characteristic mental phenomena of chronic dementia resulting from masturbation in young men.
- "As in diseases of an exhaustive nature we find that the cutaneous secretion is poured forth abundantly, so in the cases occupying our attention, the perspiration breaks forth on the

stightest exertion. This relaxed condition of the perspiratory system is especially marked in the palms, and the exception is to find these dry in the masturbator; for generally a damp, or cold, clammy perspiration is constantly present, and makes it particularly disagreeable to take the hand of one of these persons. The sub-tegumentary layer is but sparingly supplied with fat, which is remarkable, considering the little exercise these patients, if left to their own guidance, would take.

"'To conclude this description, it is only necessary to add that the gait is slovenly or slouching, that the gaze is downcast or averted, and when addressed, the masturbator does not look the speaker openly in the face whilst he replies, but looks to the ground or beyond the questioner.

""Remonstrate with these victims after they are received into an asylum, whilst reason is still not quite destroyed, and they will agree with your remarks. They will express their thankfulness that they have yet been spared some portions of reason; they will express their deep abhorrence of their conduct; they will shed the tears of apparent penitence; and yet the old habit will be relapsed into; and when they think that they are removed beyond control, will once again indulge in their self-destroying practice. The determination to conduct themselves in the pure course is wanting, and in this there is evidence of the pernicious energy-sapping cause.

"'Few accidents are more capable of occasioning annoyance and disappointment to the physician, and none more calculated to excite his pity and regret, than to find the recovery he regarded as certain, marred and prevented, or delayed, by the preventable act of the patient himself. This cause of relapse is but little believed in, except by those who are intimately acquainted with the habits of the insane; but regarding it as possible, many an unexpected and unaccountable relapse can be readily explained. When any tendency to indulgence has been observed in the early stages of mania, the prognosis ought

to be stated in well-weighed words. The fact of a patient, neither epileptic nor the subject of paralysis (although in young men the former is more probable), who when put to bed was progressing favorably, being in a lost or much confused state when he got up on the succeeding morning, would be significant of some cause acting during the night. In the absence of excitement or a fit, the probability of this cause ought not to be forgotten.

"'In the acute or recent dementia, the condition of the patient is most pitiable. His existence is, for a time, merely vegetative, and in well-marked cases the obstinacy of disposition is almost the only indication of a mental action, and the mental origin of this may even be doubted. The sufferer becomes quiet silent, and is lost and unable to take care of himself. He becomes statuesque, and extremely obstinate. He resists passively, and occasionally actively. If he be in bed, he will not rise to be washed or dressed. If up, he will not retire at proper time to bed, or allow himself to be undressed. Everything requires to be done for him. Cleanliness is neglected, and his dress unattended to. He makes no effort to speak, and when addressed, although conscious, does not appear to comprehend what is said. He will not feed himself.

"'How earnestly do those who know what the future will bring to such a one repeat these feeling words of Ellis—'Would that I could take its melancholy victims with me in my daily rounds (at Hanwell Asylum), and could point out to them the awful consequences which they do but little suspect to be the result of its indulgence. I could show them those gifted by nature with high talents, and fitted to be an ornament and a benefit to society, sunk into such a state of physical and moral degradation as wrings the heart to witness, and still persevering, with the last remnant of a mind gradually sinking into fatuity, and with the consciousness that their hopeless wretchedness is the just reward of their own misconduct.'"

Dr. X. Bourgeois, of Paris, pictures the same conditions in the following vigorous language; - "How many times in visiting the asylums of the insane, -Charenton, Bicetre, La Salpe. triere, Saint-Lazare, -how many times have I meditated upon the deplorable consequences of debauchery, upon the terrible but just chastisements inflicted in consequence of outraged hygiene and morality! O golden youth! said I to myself, at this hour so brilliant of health, so thoughtless, -you who are intoxicated with pleasures, who taste one by one the thousand enjoyments of the senses, who lavish your gold and the luxuriant forces of your life, may you never, like me, be present at these touching spectacles of intellectual decay and of moral degradation! Oh that you may not hear the lamentable histo ries of these brutish beings, who erewhile, like you, hastened from festival to festival, like you sacrificing themselves to idols * * Now behold them, these sad vicof flesh and bone! tims, such as debauchery has made them! them with wasted body, stupid countenance, an eye without fire, a face without thought! They are there, filthy, ragged, infected, their hair disordered, with drivelling mouth, flabby arms, and trembling limbs. One passes his days crouched in a corner, immovable and mute, soiled by his excremental ordures which he evacuates unconsciously. The other, beset by the salacity of a satyr, has the insatiable madness to seek in his withered organs the enjoyments which they can no longer give.

"If we did not see these hideous spectacles, we could not believe that human nature could ever descend to such a degradation of body and soul." Surely the French statesman, Count Joseph de Maistre was right when he said, "The passions can augment the number and intensity of diseases to a point which it is impossible to assign; and, reciprocally, the hideous empire of physical ill can be contracted by virtue within limits that cannot be fixed."

Nor is it only the trained eye of the physician which can see the danger and distruction, the idiocy and insanity, which result from this insidious vice. The following letter from an educator of large influence, and in high position, speaks for itself.

My Dear Friend:—In keeping my promise to give you some of the results of my observations touching the terrible habit of self-abuse, I will, by your leave, address myself directly to the readers of the book which you are so kindly and wisely preparing for their instruction.

My Dear Boys:—Do you know how much it will be worth to you if you can keep your lives clean and sweet all your days? Do you know what a dreadful thing it is for a boy or man to become so accustomed to impurity that he forgets how to blush at that which should fill any good man's heart with shame? An obscene story, however ridiculous, is like an infected garment; it cannot be circulated without leaving everywhere its dreadful influence. A good man once told me that he had never been able to forget the one or two filthy stories to which, in his boyhood, he had been foolish enough to listen. After fifty years of earnest, active, Christian life, the disgusting scenes depicted in these stories would be suggested by some association of ideas, would force themselves upon him, and would no more "down," at his command than Banquo's ghost at the bidding of the conscience stricken Macbeth.

And yet, my dear lads, how many of you are thoughtlessly smirching your young souls with jests, stories and imaginings, impure in their nature and too often so foul that, if while you were indulging therein, your eye should meet your mother's, it would fall to the ground in miserable and shameful confusion! What fascination is there in impurity, that it has such a hold upon our young folks? Nature cries out against it and warns you in every way. that you are bringing shame upon yourselves.

My dear young friends, do you not know how surely the habit of obscene thought and speech develops into the impure act, and habits of thought lead to habits of life, in the indulgence of which there is but one tendency, viz., a lowering, a degrading of the whole being, moral and physical?

The one especial habit to which I refer, you boys know well; it is too sadly prevalent, for you to be ignorant of it, and yet, with all its prevalence, so little understood that its fearful results are either unknown, or their recital laughed at as incredible.

In many years of intimate dealings with boys and young men I have had abundant opportunity of learning much of the prevalence of this habit, of its strength, and of the awful results of its long continuance.

Of all boys whom I have known to indulge in this sin, I do not remember

ONE who has not paid a fearful penalty. Nature is like a wise school-master. She does not lay the same punishment upon all, but treats each according to his constitution and disposition. The timid and irresolute lad she binds to his habit with chains of iron and then afflicts him with a growing appreciation of its horrible tendencies and a conviction of his inability to conquer it. The self-willed and self-confident lad she hurries on in his chosen path, and when he at last recognizes his danger, allows him, in accordance with his natural disposition, to take such a means of cure as brings a worse form of trouble, not to say sin, in its track. The sharp, calculating boy, who, like the moderate drinker, thinks he can keep his Indulgence under good control, so that it will not do much harm, receives, perhaps, the most merciless chastisement of all, for he is allowed to go on, thinking he can stop any time he wants, until he is in such a condition that nothing short of a miracle can save him, and even then he is inclined to temporize instead of making a determined and uncompromising renunciation of his sins, mental and physical.

In my observation of, and talks with boys, I have found a somewhat varied line of causes for the continuance of the habit, all satisfactory enough to the boys, but simply foolish to those whose wider and longer observation has opened their eyes to the stern, relentless facts of the case; and I wish to tell you, kindly but plainly, just what you may expect as the penalty for this abuse of nature.

First of all, quietly and stealthily the habit will gain strength until you are more thoroughly its slave than a drunkard is a slave to his drink. This may seem impossible, but I believe it to be true for this reason. The drunkard has a fierce struggle with a thirst which takes hold of his very life, but he needs only to avoid liquor, refuse to take and drink it, and he is saved. He may be removed to a place where it is impossible to obtain the poison, and kept there if need be during life.

The victim of the habit I am describing has to contend with as fierce a passion, and cannot escape from it; he may shut himself up in seclusion and only double the temptation and the opportunity of yielding to it. Nay more, though he may resist never so bravely, during his waking hours, he finds to his horror that the habit invades his sleeping hours and secures its victim then, and if I may credit the testimony of some boys, no expedient they could devise, enabled them to avoid this semi-unconscious abuse.

Even if all boys do not reach this discouraging condition, they are sure to come to a stage of sensitiveness and excitability in the sexual organs which is simply disease, and that too of a nature not easy to remove, often assuming the form of partial or total impotence, the more obstinate because its cause is so difficult to control. Of course physicians know of remedies for it, but these remedies are simply worthless, if the victim continues to indulge his

imagination, by dwelling upon things pertaining to the relations of the sexes, and the avoidance of these imaginings, the boys usually acknowledge to be almost impossible.

Moreover the mind works uncontrolled during the slumber, and vile, exciting dreams cause the loss of seminal fluid. The frequency of these discharges is largely dependent upon the tendency of the mind to dwell on impure things and the control of this tendency soon becomes impossible.

The result of frequent seminal loss is a rapid decrease of vigor, both physical and mental, and a loss of that will-power on which depends the last hope of recovery.

The phases of this terrible affliction thus far described are very common, and I believe, the almost invariable results of any extended indulgence in self-abuse. If you are reckless enough to run the risk, trusting to your control of the habit, you are sure to suffer thus far, and there is much danger of still greater trouble. Let me explain.

I have shown you that this habit, coupled, as it invariably is, with an imagination growing continually more vicious and uncontrollable, brings you to involuntary self-pollution, or vile dreams and consequent loss of semen during slumber. If the disease is not speedily checked at this phase, there comes a breaking down of the system, more or less rapid according to the natural strength of your constitution, your habits of life otherwise, and the persistence of the effort to resist the evil.

I say there is rapid loss of strength, both physical and mental, and a loss of will-force which is indeed alarming in view of the necessity of its persistent exercise as the only means of safety.

From this time, judging from the cases with which I have met, the disease may assume any one of several phases. I will speak of three. It may take the form of physical weakening and run into a sort of wasting away of the vital forces, clearly evidenced in the sunken cheeks, the dull eye, cold hands and great exhaustion under slight exertion; in fact a sort of consumption follows which usually ends in death and always makes its victim peculiarly powerless to resist the inroads of other common diseases.

It may take the form of mental weakness while the body seems vigorous or at least ordinarily healthy. This mental weakness frequently becomes insanity, and an asylum is the only remedy; moreover the physicians at insane retreats will tell you that this class of victims to insanity is not only very large, but almost hopeless of recovery.

It may take the form of a more moderate physical weakness combined with a mental anxiety concerning ones condition, which amounts to hypochondria, increases to the point of despair and frequently ends in suicide.

Let this suffice. Is not the description of the consequences of this com-

mon habit sufficiently terrible to convince you of the madness of persistence therein?

But I think I hear some of you with the wisdom of Young America-

"Who thinks he all things knows,
When, in truth, he nothing knows,"

arguing that these things cannot be, for you know of plenty of boys who have this habit and are just as well and strong as any one; aye, perhaps, in your own secret souls, you say that you are yourselves guilty, but can see no signs of the terrible things which I have described.

Very true, but you must remember that, though nature keeps very long accounts, she always exacts pay. The habit may run on for years and seem harmless, while it is all the time quietly, insidiously securing a foot-hold in your very being, and suddenly you awake to find yourself its slave. 'Tis like some sweet narcotic, pleasant to the taste but sure in its proper time to overcome all resistance and hold its victim powerless in its embrace.

Let no one deceive himself with such comforting assurance, but listen to a few facts.

I knew a tall, graceful, handsome young fellow; the pet of society, the leader of his class in school, who carried on this habit unsuspected till his twenty-third year, and then, to the astonishment of every one, was suddenly placed in a private insane retreat, where he remains a hopeless case. The trouble was generally supposed to be over-study; I know better.

There was a lad of fifteen, large, strong, a good scholar and apparently in vigorous health; I know, for his broken-hearted father told me, that he was obliged to sleep in the same room with his parents that aid might be at hand when, as was frequently the case, he went into spasms, the result of this wretched habit.

There was another lad, a bright boy of fifteen, the nephew of a physician of high standing. Finding this habit getting the better of him, he went to his friends for help. All was done that could be done, but his mind and will weakened, he yielded to despair and, before his twentieth birthday, shot himself dead, and a young life that might have been brighter and happier each year, went out in darkness, leaving no ray of hope to sorrowing friends.

These are only a few of many cases where, though late, Nature has exacted her fearful penalty, and as my mind goes back over the sad experiences which have come within my knowledge, my heart is saddened as by the passing of a funeral procession. Oh the young lives ruined, the bright prospects blighted, aye and the hopes of Heaven itself destroyed.

God grant my young readers, that you may take warning from others who have paid so dearly for a miserable and unsatisfactory, an unnatural and degrading indulgence. As I said at the outstart, I believe the habit is, from its very nature, more enslaving than liquor-drinking or opium-eating, for it

chains both mind and body, and controls both waking and sleeping hours. For this truly infernal course, Dante's motto is emphatically appropriate, "Who enters here leaves hope behind."

Hoping that these plain words may be the means of saving some of you from untold misery, I remain

Your sincere friend.

Another most worthy and conscientious teacher writes me;—
"It may not be necessary for me to give the results of my observation as to the physical effects of this evil upon the children and youth. Your own observation and knowledge as a physician is doubtless sufficient. There can be no doubt that if parents better understood the secret lives of their children, they would find, in many cases, that this vice was the primary cause of the fits, nervous diseases, brain troubles, etc., so common among children.

"A mother came to me very solicitous in regard to her boy (six years old), a pale sickly looking child. She informed me that the doctors said he had over-growth of the brain. She requested me to be very careful of him, and if I noticed his face flushed and he appeared nervous, to send him home; also cautioned me to be sure and not push him too fast in his lessons. Carefully watching the development of his mind, no marked evidences of unusual intellect were discovered; on the contrary, I regarded him as below the average boy. In conversation with the child it was ascertained that he was in the habit of practicing this vice. To the question, 'Does your mother know of of this?' he replied, 'No, she don't know that I do it now. She knew I did it once, for I was awful sick. I swelled all up and had to have the doctor, and they told me I must never do it again. But I do it most every day.' To the question, 'When and where do you do this?' he replied, 'Out in the privy when I am all alone.'

"Another instance came under my observation, though not as a teacher. A little boy seven years old lay sick with brain

fever, and in spasms. As a neighbor and friend, I assisted in changing his clothing. He was, to all appearance, unconscious; but his hands were so constantly employed exciting himself, that it was nearly impossible for two of us to change his clothing. A council of physicians had already been called. The most prominent physician—about fifty years of age—was informed of the child's appearance while we were changing his wraps, and was asked if it were possible that the child's sickness was caused by masturbation. He seemed incredulous at the idea that a child so young would practice this evil to such an alarming extent.

"Facts were related to him concerning the habits of small children when at school—of children even younger than this boy. He remarked it was a new idea to him that it was prevalent among small children. He requested that inquiries be made of the child's playmates to ascertain if the boy was addicted to the habit. The inquiry was made in plain language to his most intimate playmate, and he replied, 'O, yes, I've seen him do it lots of times. He does it most all the time.' Inquiries were also made of his teacher. She confirmed the same from her knowledge of him at school. 'It is sufficient evidence,' said the physician. The child lived but a few days longer.

"Afterward, the child's father remarked to me, 'I can hardly forgive our family physician, because he did not give me instructions about children. I was young, and ignorant of that which, perhaps, I ought to have known; and had I known what I now know, my little boy might have lived."

"Teachers who have investigated this subject find many ways by which they can detect this practice from the general appearance, and also the faces of boys. Give an observing teacher a few known cases as types of boys who practice masturbation, and many a boy would blush did he know how easily his face told the tale of his secret life to his teacher."

And yet, the pity of it all lies beyond all this insanity, and spasm, and death. These witnesses have been called to testify, that you might have no remaining doubt of the stern physical penalties awaiting this transgression. They have shown how the extreme of mental and physical disaster awaits the persistent abuse of this procreative power. With these dire consequences clearly held up before the mind in all their hideous reality, with all the solemn emphasis of their presence, let it be repeated that the exceeding pity of it all is more than this. house, sadder than than tenantless dethroned, sadder than the groping form of manhood with its soul-light gone out in darkness, is a sound mind domiciled in a sound body, stricken with the cursed paralysis of purposelessness. This fateful palsy, before which the horrors of the insane asylum dwindle into insignificance, is the one ever-present,

rer-failing, characteristic result of masturbation. "A morbid ental state is connected with such a condition, and is apt to be the most serious part of the case. The mind is deficient in concentration; attention wanders, will is weak, timidity and irresolution prevail; the memory is feeble, and there is a proneness toward day-dreaming, especially upon sexual or sensual subjects. Moreover, the patient is inclined to dwell morbidly and with gloomy apprehensions upon his own state."

But a small percentage of masturbators are found in the insane asylums; but a small percentage suffer from epilepsy; but a small percentage of them may be found among the list of sufferers from any one of the many forms of nervous disorder, or disorders of nutrition. But this inevitable loss of all purpose, is the portion of them all without exception. In the words of Emerson, "The one prudence in life is concentration; the one evil is dissipation." I know of nothing which so surely dissipates all high ambition, all nobility of purpose, as does this practice, from its very inception. Others may rail against it as

^{*}Dr. Hartshorne, in Reynolds' System of Medicine.

a vile habit, a shameful practice; I would pass over all that, and bring a rigorous indictment against it as the great purpose-destroyer.

Says Bulwer Lytton, "What men want is not talent, it is purpose." All educational effort may be summed up in that one word—purpose. It used to be said that education might be expressed by the word discipline. But to-day the dangerous members of society are men of so much ability, that now we hear of the necessity for *Christian* education. Your education has been a success or a failure, just in proportion as it has given you, or failed to give you, true nobility of purpose. Dissipating the intellectual powers, hamstringing the tendons of the will, and assassinating all purpose, masturbation is the foe of education, the arch traitor to discipline, "the one evil."

"The sin of all most sure to blight—
The sin of all that the soul's light
Is soonest lost, extinguished in."

Remember that it is not of the function, but its abuse, that we speak. There is nothing so grand as power, so disastrous as its abuse. We have already seen the dignity of the function; but "O Lucifer, Son of the Morning, how art thou fallen!" It may be the boy at school. Bright, alert, proud of his standing in the class, on the qui vive during recitation, filled with chagin over every little failure on his part, his teacher is puzzled by the suddenness of the change which has come over him. He shuffles along into the recitation room as if ashamed of himself, yet apparently dead to all sense of shame. For now he does not pretend to have his lesson, and instead of the accustomed blush over every little slip, he lets the whole recitation go by with nothing but a sullen look, and a muttered "don't care." Purpose and ambition have been foully murdered in the tower, like the two princes of history. The one aim of existence, for him, is the procuring of opportunities for his clandestine orgies.

Sometimes such an one will assume a fictitious air of oversprightliness, and activity; and his parents blindly worry about his "nervousness." But his teacher finds that the spirit of endeavor has left him just as completely, and, to the observant, his exaggerated activity is painful from its patent insincerity. It may be the young man, at college, or studying for his profession, or beginning business life at the foot of the ladder. For some unaccountable reason his tutors can do nothing with him, can make nothing of him; or his employer says that he hasn't the right stuff in him. Purpose and ambition have been foully murdered in the tower. Memory, that "warder of the brain," goes next. It is the best thing you have left, but this spoiler is a ruthless vandal. It enters this citadel of the mind, and saps its foundations, until its turreted walls topple into ruined heaps.

Still the destroyer is not satisfied. The innermost sanctuary of the intellect is assailed. Its pearly gates are rudely beaten down. We catch a wondrous glimpse for just one moment—the tessellated floor of polished marble—the lustrous granite columns, each one the monument of a conquered obstacle, hewn by hope and burnished by sorrow—the groined arches above, fretted with all the jewels of faith, of love, of joy, of peace, of heaven-born inspiration—its every niche filled with mellow light overflown from the celestial walls—the central shrine of sheeny gold where burns the sacred fire of imagination—the broad white wing above it hovering, for here the mortal converse holds with his own immortality, and the pinion waiteth for the spirit. One moment—and the ruffian tread of the destroyer echoes through its vaulted arches, and all goes out in ruin and in darkness.

Oh! the pity of it all. Marshall out the haggard and dishevelled throng from the insane asylum, bring up the rank and file of leprous vice, let the epileptics go through their frightful drill, yet will I summon a more regretful host than this allied

army. They come on every hand, in surging multitudes; from cultured homes, and sunny firesides; from schools of learning; from store, and office, and shop. Fair in form and feature, their youthful promise the hope of the Republic, no plague-spot to be seen on any one of them. Yet they are but spectres of men. Within them memory is decrepit; high ambition is murdered; purpose lies dead in the house; imagination is become a debauchee. Preserved in outward form, they have already suffered within themselves life's utmost possibility of disaster. Memory gone, ambition gone, purpose gone, imagination worse than gone—what have they left to lose? The greater includes the less; in losing these they have lost all.

And such internal wounding as this is every masturbator's penalty. The real gravity of consequence is found just here, and not in the insane asylum. In placing imagination alongside of memory and of purpose, a high rank has, by design, been accorded to it. It is hard to be patient with those who underestimate its place among the intellectual faculties; who talk perpetually of "keeping it pure," as if its only active tendency were toward putrefaction, its best estate a complete quiescence. Who shall say that it is not the highest of the mental powers? Imagination paints the picture, and chisels out the statue. Imagination created the cotton gin, the railway, the telegraph, the ocean steamer. It is the light cavalry upon which science depends for its every reconnoitre. It is the difference between mediocrity and genius. Mediocrity says that our soldiers left their homes to enter the army. Genius sees them, "talking with wives, and endeavoring with brave words, spoken in the old tones, to drive from their hearts the awful fear. them part. It sees the wife standing in the door with the babe in her arms-standing in the sunlight sobbing-at the turn of the road a hand waves-she answers by holding high in her loving arms the child. He is gone, and forever."

Imagination is sight. Debauched by this vice, it is as mighty for evil as it was, before, powerful for good. In virtue, in an earnest life, it can see nothing to be desired. To its distorted gaze, purity itself seems leering with lecherous look. What shall we say of such a distemper as this? There rises before me the form of Gen. Robert E. Lee. It is after the battle of Gettysburg. He stands upon the ground, leaning against his charger, his head resting upon his hand. The defeat, the waste of human life, the dread aggregate of human suffering, rushes upon him like a flood. "Oh! it is too bad, too bad!" his only words.* "In my opinion," says Reveille-Parise, "neither pestilence, nor war, nor variola, nor a host of similar ills, has results more disastrous for humanity. It is the destructive element of civilized societies; and it is much the more active, inasmuch as it acts constantly, and ruins populations little by little."

Having seen something of the prevalence and destructiveness of this solitary vice, there remains the question as to how we shall escape the formation of this habit; and how far we may succeed in restoring those already within its grasp. It is most pleasant to turn to the consideration of these topics, for the wise parent may save his son untold mental disquietude and loss, and much bodily infirmity; and the wise physician may set the young man's feet upon a rock, although he may have been standing in slippery places. One night, in the British House of Commons, when, at the hands of Disraeli, the Liberal party was about to suffer defeat, Gladstone exclaimed, "The Past is yours; the Present too, for that matter. The Future is ours." With these same words may any young man address his disastrous habit, just so soon as he is determined to have nothing more to do with it.

The parent's work is preventive; the doctor's curative. An

^{*}As told me immediately after the war, by an officer of the army of the Potomac.

ounce of prevention being worth a pound of cure-it being always best to avert disaster rather than repair damage, it follows that the parent's work in this department is of the first importance. A boy is never so young as not to need the father's kindly and watchful oversight in this matter. He should be on the alert for any manifestation of a premature development of the reproductive instinct and organism. "In many instances, either from hereditary predisposition, bad companionship, or other evil influences, sexual feelings become excited at a very early age, and this is always attended with injurious, often with the most deplorable consequences. Slight signs are sufficient to indicate when a boy has this unfortunate tendency. He shows marked preferences. You will see him single out one girl, and evidently derive an unusual pleasure (for a boy) in her society. His penchant does not take the ordinary form of a boy's good nature, but little attentions that are generally reserved for a later period prove that his feeling is different, and sadly premature. He may be apparently healthy, and fond of playing with other boys; still there are slight but ominous indications of propensities frought with danger to himself. His play with the girl is different from his play with his brothers. His kindness to her is a little too ardent. He follows her, he does not know why. He fondles her with tenderness painfully suggestive of a vague dawning of passion. No one can find fault with him. He does nothing wrong. Parents and friends are delighted at his gentleness and politeness, and not a little amused at the early flirtation. If they were wise they would rather feel profound anxiety; and he would be an unfaithful or unwise medical friend who did not, if an opportunity occurred, warn them that such a boy, unsuspicious and innocent as he is, ought to be carefully watched, and removed from every influence calculated to foster his abnormal propensities.

"The premature development of the sexual inclination is not alone regugnant to all we associate with the term childhood,

but is also frought with danger to dawning manhood. On the judicious treatment of a case such as has been sketched, it probably depends whether the dangerous propensity shall be so kept in check as to preserve the boy's health and innocence, or whether one more shattered constitution and wounded conscience shall be added to the victims of sexual precocity and careless training. It ought not to be forgotten that in such cases a quasi-sexual power often accompanies these premature sexual inclinations."* The precise measures by which such tendencies are to be staved and neutralized, must be left to the discretion of the parent, who will suit them to the wants of the individual case. In all cases, however, it will be in order to see to it that all needless manipulation is dispensed with; that the local cleanliness enjoined in a preceding chapter be faithfully attended to; that the physical culture be made paramount to the mental; that that confident sympathy which should obtain between parent and child, be promoted by all means possible.

All this should be done, yet these things are but prefatory to the one great safeguard, the one great preventive—direct instruction. At just what age a son should receive fatherly instruction concerning those things which he ought to know, and has an indisputable right to know, I shall not attempt to here determine. No age could be fixed which would be best for all boys. Surrounding circumstances and the rate of development make it necessary to determine this question anew for each individual boy. It will be enough to remind parents that these sons of ours learn all about these things, from most objectionable sources, at a much tenderer age than most imagine; and that while there is no computing the number of those who daily testify to our doctors of the damage they have suffered through the failure of parents to

^{*}Acton.

warn them of possible dangers, the first one to suffer any harm from premature parental instruction is yet to be found.

Instruction does prevent. There is no doubt about it. is no good reason for withholding it. "Remember that the aim of your discipline should be to produce a self-governing being, not to produce a being to be governed by others. As your children are by-and-by to be free men, with no one to control their daily conduct, you cannot too much accustom them to self-control while they are still under your eye. Aim, therefore, to diminish the amount of parental government as fast as you can substitute for it in your child's mind that self-government arising from a foresight of results. All periods of transition are dangerous; and the most dangerous is the transition from the restraint of the family circle to the non-restraint of the world. Hence the importance of pursuing the policy we advocate; which, alike by cultivating a child's faculty of self-restraint, by continually increasing the degree in which it is left to its self constraint, and by so bringing it, step by step, to a state o unaided self-restraint, obliterates the ordinary sudden and hazardous change from externally-governed youth to internallygoverned maturity."*

A teacher, writing me about a class of boys for whom it is worth while to work, says;—"There is a class of boys that it seems almost impossible to reach by human influence; possibly pre-natal education has much to do with this. However that may be, they have little aspiration for anything that is pure or good. Their influence is contaminating and corrupting. There is another class of boys, who, if better understood by teachers, might be reached and helped to lead nobler and purer lives. Not all of the so-called 'bad boys' at school, are really bad at heart. Some of them have aspirations for a better life, but have become victims to this vice when very young, and are wholly ignorant of its effects. The power of habit is strong.

^{*}Education. Herbert Spencer.

and the proper instruction, if any, may not have been given by parents. 'No one has cared for their souls.' The powers of self-respect, self-reliance, and self-control, have become weakened. It is no wonder they are discouraged. They are sufferers, and do not comprehend the cause of their suffering. At home they are contrary—cross and selfish. At school they are restless, reckless, and disobedient.

"A teacher, understanding these symptoms, and giving proper counsel, might help lift many a boy to a higher life. Many instances might be given; but one boy especially comes to mind. He was about fitteen years of age, from an intelligent family and a Christian home. He was trying to be a Christian; yet at times he was contrary and wayward at home. At school I found him restless, impatient at restraint, and easily discouraged with lessons. He was a source of annoyance and trouble—every measure failed to have a permanent influence.

"In conversation with an older sister, I learned that when he was a little child two or three years old, he was left in her charge one day, while the mother was away. She was young, innocent, and ignorant; and while adjusting his clothing she accidentally touched him in a manner that tickled, causing the child to giggle and laugh. She thought of it only as fun; and exciting him, played for hours with the child, and frequently did it afterwards. From this time, while he was a small boy, she knew he was in the habit of exciting himself. It was the secret fear of her life that she had ruined her brother.

"After learning this, the following conversation took place one day;—'My boy, you are not at heart a bad boy.' He replied;—'You don't know me.' 'Yes, I do, and I know what makes you so restless and reckless at times. I understand you thoroughly. I know the secret cause of all this.' He fastened his eyes upon me for a moment with a fierce, tiger look; then tears filling his eyes, he said;—'If you understand me, you are the only person in the wide world who does. My father does

not understand me.' A brief conversation followed and he asked;—'Are you really a friend to me?' This is not an isolated case. There are in a teacher's life many instances where proper instruction given in a kind manner before a boy's self-respect is gone, may save him. With loss of self-respect comes despair.

"Could this class of boys be made fully to understand the importance of pure secret life in youth; could they realize that masturbation in youth will affect their whole after life, not only physically and mentally, but also morally; that purity of character once lost can never be restored to them, comparatively few of the boys now practicing this vice would be long found among its victims. Whatever may be said of Henry Ward Beecher, he had a high conception of purity of character when he expressed these thoughts; - 'Over the plum and apricot there may be seen a bloom and beauty more exquisite than the fruit itself—a soft delicate flush—that overspreads its blushing cheek. Now, if you strike your hand over that, and it is once gone, it is gone forever; for it never grows but once. flower that hangs in the morning impearled with dew, arrayed with jewels-once shake it so that the beads roll off, and you may sprinkle water over it as long as you please, yet it can never be made again what it was when the dew fell lightly upon it from heaven.

""On a frosty morning you may see the panes of glass covered with landscapes, mountains, lakes, and trees, blended in a beautiful fantastic picture. Now, lay your hand upon the glass, and by the scratch of your fingers, or by the warmth of the palm, all the delicate tracery will be immediately obliterated. So in youth, there is a purity of character which, when once touched and defiled, can never be restored,—a fringe more delicate than frostwork, and which, when torn and broken, will never be re-embroidered. A man who has spotted and soiled his garments in youth, though he may seek to make them white

again, can never wholly do it, even were he to wash them with his tears.

""When a young man leaves his father's house with the blessing of his mother's tears still wet upon his forehead, if he once loses that early purity of character, it is a loss he can never make whole again. Such is the consequence of crime. Its effects cannot be eradicated, they can only be forgiven."

The young man should distinctly understand that this matter of seminal losses is altogether a relative affair. His understanding of this should be definite and explicit. Professor William C. Wilkinson remarked recently, that he was impressed anew with the "relativity" of things. Phosphorus is a necessary element in the processes of the animal economy; yet phosphorus is a frightful poison. A temperature of ninety-eight and three-fifths degrees, is the requirement of health; add to that ten degrees, and we have death almost inevitable. Precisely the same relation exists between the occasional unloading of the seminal vesicles of the continent celibate, and the exhausting orgies of the masturbator.

"It is important to bear in mind that involuntary seminal losses, to constitute a disease, must occur with sufficient frequency to produce definite symptoms. Many patients who come to a physician for advice and treatment for this affection are not really suffering from the seminal losses, but from an imaginary ailment. Experiencing an occasional seminal loss, and ignorant in regard to the physiological condition, they imagine themselves the subjects of spermatorrhæa. Brooding over their presumed 'weakness,' they fall into a hypochondriacal state, and soon experience the whole train of wretched symptoms depicted in popular works on the subject. Every subjective sensation, no matter what its origin, is referred to the debilitating effects of the spermal losses. * * Cases of this kind are very numerous, and difficult to manage. No explananation or demonstration satisfies them. One apprehension

allayed, they quickly take up another, returning at last to the sexual disorder."*

"In continent men of full health, an involuntary seminal discharge during sleep once in two or three weeks is common; and is then so innocent as to be regarded by many as physiological and normal. More frequent emissions are abnormal, in proportion to their frequency; and may cause much loss of strength. While hæmorrhoids, worms in the bowels, etc., may occasionally promote this, the cause of actually excessive spermatorrhæa, in ninety-nine cases (at least) in a hundred must be believed to be self-abuse. The cure of this habit is, not always at once, but almost certainly in the end, the cure of the resulting spermatorrhæa. The disastrous effects so obvious in many cases are due first to the vicious habit, and secondarily only, to the involuntary discharges." †

"In as much as the seminal secretion of a healthy man may naturally be supposed to be a continuous one, it appears as a physiological necessity, that there should occur from time to time an overflow of semen involuntarily, when not irritated voluntarily by coition or masturbation. As long as such discharges happen at night during sleep, with erotic dreams, accompanied by erections and voluptuous sensations, and followed by a sense of relief and buoyancy, these nocturnal pollutions are certainly within the boundaries of health. They do not occur regularly even in the same individual, but vary greatly in frequency from temporary causes, or certain constitutional peculiarities. However, if they occur too often, say several times a week or oftener, and are followed next day by a general dullness and weakness, diminution of mental activity, etc., instead of buoyancy, they can scarcely be looked upon as healthy occurrences. This is still more so if they occur without erection and sensation in the night during sleep. But if they occur even in the daytimef diurnal pollutions'-while the individual is awake, without the

^{*} Bartholow. † Hartshorne.

usual mechanical causes (coition or masturbation), from any trifling external cause; for instance, from dallying with a female, riding on horseback, during evacuation of the bowels or bladder, or from lascivious imaginations, then there surely exists an irritation and weakness in the sexual organs which is pathological; for a healthy man never loses semen involuntarily when awake."*

The only criterion by which we may determine whether a given frequency of appearance of the fecundating fluid be normal or abnormal, is the effect upon the individual. No mathematical rules can be laid down. Yet the wisest course to pursue is not by any means found in a constant and anxious sur_ veillance of this function. Of all men most miserable, is he who assumes the attitude of special policeman toward all his bodily functions. Think of your head, and it will be sure to ache; wonder whether your eyes are equal to your work, and presto, they begin to pain; interrogate your stomach, and at once it becomes sulky; take anxious thought for the alvine evacuations, and you are inevitably constipated; fancy that you cannot sleep, and in the morning you are equally forlorn, slum ber or no slumber; decide that your lot is physical weakness, nor allopath, nor homœopath, nor hydropath, nor eclectic, nor Thomsonian, nor sanitarium, nor mineral water, can do anything for you. For you the only efficient measures are spanking, and a nursing bottle. There must be a return to first principles. You must begin again at the beginning, and learn how to live.

To bestow this conscious thought upon these physical processes which nature has decreed shall move forward without the intervention of the will, is to violate the first rule of health. Unconsciousness of the physical man is the primary condition of normal manhood. If you begin to question whether you are not suffering from this or that ailment, you will inevitably experience its characteristic symptoms, together with a host of oth-

^{*}Raue. Special Pathology and Therapeutic Hints.

ers which are not characteristic, but absurd. In this way you may hunt yourself through the whole dread catalogue of the ills to which human flesh is heir, from A to Z. Who ever heard of even a medical student, who could pass through the ordeal of the first study of diseases of the heart, without becoming firmly impressed that his own heart was seriously deranged.

Why, we have the disease known as syphilophobia—dread of syphilis. The patient dreads lest he be the victim of syphilis, when he knows perfectly well that the disease is communicated by contact, and that he has not thus rendered himself liable. It is precisely the same with the seminal overflow. The discharges are watched with eagle eye; the most direful results are anticipated; and through imagination, more or less realized. It is really a case of spermatophobia, and we ought to have such a term in our nomenclature; for the victims of this imaginary disorder are very many. Let all these lay it to heart, as well as those who have no fears, but would do the best things for their bodies, that direct, solicitous attention to this matter is just the way to get into trouble.

We were not created to be absorbed in the reproductive function, any more than in the alimentive function. If we set ourselves as watchdogs over it, the tendency will be toward our becoming constantly more cur and less man. Adaptation under training, is one of the most frightful of natural laws to those who make bad use of their powers. The way of right living is found in the exercise of common sense toward the body as a whole, and the ignoring of particulars. Go to bed early, and rise promptly in the morning; but don't fill your brain with meditations on the dangers of insomnia. Eat good, sensible food; but don't be everlastingly questioning whether this or that will "agree" with you. Be sure that you are not living an aimless existence; let each day be purposeful; keep steadily at work for some definite end; and let the reproductive function take care of itself. It will care for itself more successfully

than you can care for it, if you will only let it. If your best energies, mental and physical, are daily exercised, with strong and steady purpose the motive power, eruptive excitements of the reproductive apparatus will be sufficiently infrequent to quiet all alarm.

That spermatorrhœa which is real, and not imaginary, has its origin, with rare exceptions, in self-abuse. "Seminal incontinence is usually acquired, and is due in the great majority of instances to masturbation. Thus of the seventy-six cases of which I have a record, in only one was it the result of an inherited predisposition. Of the remaining seventy-five, in seventy, or ninety-three per cent, it was traceable to onanism; in three it arose from gonorrhœa; and in two it was met with in men who had masturbated, suffered from gonorrhœa, and had indulged their propensities in various ways.

"When the case goes on from bad to worse, it usually pursues the following course, in consequence of the increase in the mobility of the ejaculatory center, and of the advancing exhaustion of the entire nervous system. At first abnormal frequency of the nocturnal pollutions is associated with backache, headache, a sense of painful muscular fatigue, and slight paresis of the brain, as indicated by incapacity for any sustained mental effort. With the increase in the number of the emissions, the patient discovers that erections are becoming insufficient, and that ejaculation on coition is precipitate; and the general symptoms are aggravated by the addition of dulness of perception, impairment of memory, vertigo, mental dejection, weakness of vision, trembling of the limbs, palpitation of the heart, shortness of breath, a sense of oppression in the chest, flatulence, constipation, and other dyspeptic signs. Diurnal pollutions from slight mechanical or psychical causes are now superadded, and the emissions occur, with little or no erection or pleasurable sensation, or even when the penis is flaccid; and intercourse is impracticable, either from flabby erection, or from

anticipating ejaculation. The general symptoms also are moreserious. The patient is liable to brood over his assumed lost. virility, and the mental depression verges upon or passes into a. condition of sexual hypochondrism. His gait is unsteady; he is subject to wandering neuralgic and rheumatoid pains; the hands and feet are habitually cold; he passes restless orsleepless nights; shuns society; fears to look one in the face; is utterly incapacitated for mental or physical exertion; and thinks of nothing but his sexual organs. With the still further increase of the irritable weakness of the genitalia and nervous system, the semen constantly oozes out of the urethra, and its discharge is augmented during defecation and micturition. The man is converted into a confirmed hypochondriac, and if he comes from an insane family, he lapses into insanity, not, however, because of the seminal losses, but because of the disturbances of the nervous system which lead to the emissions. A person who has inherited a tendency to insanity, epilepsy, ataxia, or other nervous disorders, may, therefore, bring on those affections, the first link in the chain being functional troubles of the nervous centers, which gradually pass into organic disease, and are caused, according to my observations, in rather more than nine-tenths of all cases, by masturbation.

"Of the general symptoms which are associated with abnormal seminal losses, and which indicate more or less complete exhaustion of the brain and spinal cord, an analysis of seventy-six cases, of which I have notes, indicates the following interesting facts in regard to their importance and relative frequency. There was an anxious or depressed condition of the mind in thirty-one; constant dwelling upon sexual matters in thirty-five; hypochondrism in six; mental dejection after intercourse in twenty-five; impairment of memory in twenty-three; incapacity for prolonged mental exertion in twenty-two; headache in nineteen; vertigo in fourteen; broken sleep in five; insomnia in two; drowsiness in five; irascibility in two; asthenopia, or

muscæ volitantes, in fourteen; noises in the ears in eleven; muscular weakness of the limbs and fatigue in thirty-eight; trembling of the limbs in six; temporary reflex paraplegia in one; pain in the back in thirty-two; oppressed breathing in seven; pain in the chest in three; constipation in twenty-five; dyspepsia in seventeen; palpitation of the heart in ten; subjective sensations of cold in seven, and of heat in four; loss of flesh in nine; and pallor of the face in twelve.

"It will thus be perceived that constant occupation of the mind with the sexual functions, mental dejection, impairment of the memory, incapacity for mental work, headache, vertigo, muscular weakness of the limbs, pain in the back, noises in the ears, and irritability of the eyes constitute the most common of the disturbances of the cerebro-spinal axis and of the special senses; while, of the phenomena referable to the circulatory, respiratory, digestive, vaso-motor, and nutritive systems, palpitation of the heart, oppression of breathing, constipation, indigestion, chilliness, a feeling of elevated temperature, pallor, and emaciation are the most frequent."

The local changes in the reproductive apparatus itself, induced by this artificial stimulation, have been a matter of some dispute. While masturbation is almost universally the primary cause of sexual depression, the question has been as to what particular state of affairs has resulted in the local mechanism itself, tending to perpetuate the abnormal condition, and so acting as a secondary or immediate cause. The first name of note appearing in this connection was that of Lallemand, in France, who asserted the difficulty to be with the prostatic portion of the urethra. The prostatic portion of the urethra is that portion next the bladder, about one and a quarter inches in length, embraced by the prostate gland, and containing the openings of the ejaculatory ducts, through which the semen is thrown into the urethra. Lallemand's dictum was, that an irritation

^{*}Disorders of the Male Sexual Organs. Gross.

and inflammation of this portion of the urethra was set up, sufficient to act as a constant exciting cause perpetuating, indefinitely, the disorder. Of late it has been somewhat fashionable to challenge this opinion.

Thus Hartshornet remarks; - "In pathology, Lallemand was, for a long time, allowed to impose upon the medical mind his opinion that irritation or inflammation of the prostatic portion of the urethra is the general or universal immediate cause of spermatorrhea. As Bartholow more correctly states, this is quite exceptional." Turning to Bartholow, ‡ I am much disappointed by his contradictory statements. On page 20 he says;-"To place this question beyond controversy, I have lately made a most careful dissection of the sexual apparatus of a young man dead of a double pneumonia, who was known to have practiced masturbation in an extreme degree for many years. Besides a catarrhal condition of the mucous membrane of the seminal and prostatic ducts, and of the vesiculae seminales, there was literally no lesion of these organs. I therefore reject this position of Lallemand as untenable, and as leading to improper methods of treatment." While on pages 41-2, he says, in detailing the symptoms of the disorder; -"The urethra is red, injected, and exceedingly sensitive, and considerable irritation is referred to the region of the neck of the bladder and prostate gland. No other anatomical lesions can, with propriety, be attributed to spermatorrhea."

The fact of the matter is, Lallemand's view is the most rational, best explains the tendency of the disorder to perpetuate itself, and more than all, is borne out by the facts. No surgeon who will explore the urethra in these cases, will be left in doubt. The super-sensitiveness is most marked. As Gross puts it, in his capital work; - "Onanism is the most fruitful source of inflammation and hyperæsthesia of the prostatic portion

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of the urethra, a view in which I am sustained by Rosenthal, Ulzmann, Black, Acton, and nearly all surgical authors." Again; -- "Under the influence of erotic ideas, masturbation, sexual excesses, or unsatisfied sexual excitement produced by toying with females, exaggerated irritability of the genital organs is induced, and is soon followed by chronic or subacute inflammation and hyperæsthesia of the prostatic portion of the urethra, which culminate, in bad cases, or in those characterized by diurnal pollutions and spermorrhagia, in dilitation and relaxation of the orifices of the ejaculatory ducts. As the natural result of their constant excitability, the nerves distributed to the prostatic urethra are alive to the slightest impressions. This condition induces increased mobility or irritability of the reflex cerebral and spinal genital centers, through which the motor nerves which supply the ejaculatory apparatus are thrown into action, and an emission follows. This, it seems to me, is the rational explanation of seminal incontinence."

Again; -- "Of the local causes of spermatorrhea by far the most common are hyperæsthesia and chronic inflammation of the prostatic portion of the urethra which are generally induced by masturbation; and these morbid conditions are just as important in its production as they are in the causation of impotence. In the vast majority of cases, they constitute the original source of the trouble, and tend not only to excite reflex emissions, but also to maintain the disorder by keeping the mind occupied with sexual matters. Even in cases in which the affection would seem to depend upon other local lesions, they are almost invariably present, so that associated disorders * * merely act by intensifying them." Once more; -- "Of the exciting causes of abnormal seminal losses by far the most constant and important are subacute or chronic inflammation and hyperæsthesia of the prostatic portion of the urethra and of the orifices of the ejaculatory ducts, conditions which are frequently maintained and aggravated by stricture of the passage anterior to them."

At the risk of being somewhat tedious, I have lingered upon this topic of an irritated urethra, because it is the key to the whole subject, often ignored, and carries upon its face the answer to the question why it is not enough to tell the masturbator to simply stop his evil practice. This over-sensitive prostatic surface bears the same relation to the disorder, that the abnormal appetite bears to drunkenness and opium eating.

There are other changes. The quality the of reproductive fluid is altered. The spermatozoids are deformed or absent. Bartholow is contradictory again on this point, quoting Liegeois,* to the effect that the semen suffers no change, "not even in the number or the configuration of the spermatozoa;" and adding, "This accords with my own observation." Yet asserting in another place + that "the spermatozoa are deficient in size and activity, and are imperfect in development." The weight of testimony is all in favor of the latter statement. "Heitzman found that the heads of the zoosperms were not much wider than their tails, and that their movements were very feeble." "The investigations of Rosenthal, Ultzmann, and Curschmann demonstrate that, when potence is as yet little affected, and pollutions are merely beginning to overstep the natural limits, the ejaculated fluid is unchanged. When the pollutions are more frequent, and there are diurnal discharges, the spermatozoa are smaller and more scanty; their movements are less active than in the normal condition, are liable to be abolished in less than an hour, and are incapable of being reawakened by alkaline solutions. In the worst cases, or in those characterized by diurnal and nocturnal pollutions, and by the presence of semen in the urine, the spermatozoa are either entirely absent, or, if they are present, they are motionless, stunted, or variously deformed."

^{*} Page 21.

Stricture is usually present, but not to a degree attracting the patient's attention. "In the papers already referred to I endeavored to show that confirmed masturbation is just as sure to result in urethritis and the formation of a stricture as is gleet; and that the failure to discover this lesion would not have occurred to the majority of writers on the subject if they had resorted to the bulbous bougie for exploring the urethra. Of the sixty-nine masturbators who suffered from atonic impotence, and of the seventy who had seminal incontinence, as will be seen in the chapter on spermatorrhæa, or of one hundred and thirty-nine in all, only eighteen were free from stricture, so that a coarctation should always be looked for in this class of subjects."*

Incidentally, mention has been made of impotence. It is of that kind resulting in part from the changes already enumerated, and partly from the loss of tone and vigor pervading the entire apparatus, consequent upon its abuse; just as abuse of the eyes is followed by impairment of vision. This being the case, abandonment of the vicious habit, and such enlightened aid as modern medicine can give, -in short, those measures which will restore the patient's health as a whole, local and general, will restore as well the temporarily impaired or lost virility. One of the most common fears of masturbators, and of the victims of imaginary spermatorrhæa, is that of impotence. The temporary, atonic form is common, and recovery the rule; while the genuine, idiopathic form of impotence, which is the real spectre of their vision, is an exceedingly rare affection. It is pleasant to note this, for there is a vast amount of needless anxiety suffered because of this apprehension. All the evil consequences, local and general, resulting from masturbation and spermatorrhœa, may be made to fade into the background and disappear by the high purpose of the patient and the kindly aid of the physician. Medicine can always erect an arch of triumph

^{*} Gross.

when it is able to place its finger upon the guilty cause of disease. With the disease in question the causes, remote and immediate, are so unmistakable, that when the patient and the physician join hands for the conflict, victory is assured. The physician need not be baffled, save when the patient refuses to be his ally.

Joining forces in this combat, it is the patient's part to renounce his habit of self-abuse; the physician's part to overcome the state of irritation and inflammation existing within the prostatic urethra. In so doing each aids the other in his special department of the work. For it would be useless for the physician, on the one hand, to attempt to work against a continually acting original cause; while, on the other hand, the quieting of the induced local stimulus is an immense aid to the patient in refraining from evil thoughts and practices. Without this help, it is a desperately hard task for him to empty himself of licentious imaginings and vicious habits; and fill himself with worthy purposes.

This extinguishing of a constant source of incitement to base practices, is so important a part of the treatment that Acton hardly makes mention of any remedies beyond the local measures for the accomplishment of this specific purpose. His method is to fill the urethra, by the aid of an appropriately fashioned syringe, with a solution of Nitrate of Silver, ten grains to the ounce of water, the whole of the injected fluid being allowed to pass out at once into a receptacle held in readiness for it. He requires the patient to abstain from all fluids for some hours previous to the operation, and to retain the urine as long as possible thereafter, not passing any for perhaps twelve hours. Immediately after the operation, and at intervals of eight hours thereafter, he administers a copaiba capsule to lessen the resulting irritation. This injection is supposed to act as a mild caustic; but experience with Nitrate of Silver, here and upon other mucous membranes, seems to justify the belief that it has a specific influence of its own upon these tissues, aside from its merely caustic action.

At any rate, this procedure is a very successful one. The pain connected with it is slight, much less than would be supposed, and relapses of the local condition calling for a repetition of the operation, are unusual. There is no doubt of its success and efficiency, and I should strongly urge the adoption of this measure, were not an even better and simpler way open to us by which the same end is attained. The passage of an ordinary conical steel sound, of size adapted to that of the patient's urethra, once in two or three days at the beginning, increasing the frequency of its introduction and the time of its retention as the tolerance of the urethra increases, is a simple, common sense procedure yielding the most satisfactory results. I fully concur with surgeon S. W. Gross' hearty recommendation of this measure. He adds that in his experience there will be left, in many cases, a small, probably granular, patch of sensitive surface. To this spot he makes application of a thirty grain solution of Nitrate of Silver; and repeats every four days, until the inflamed and over-sensitive place disappears, and the "Of the local remedies," he says, "the cure is complete. conical steel bougie (he evidently uses the word as synonymous with sound) occupies the first rank; but when the inflammation and tenderness are reduced to a circumscribed area which includes the openings of the ejaculatory ducts, it should give way to the application of Nitrate of Silver, a remedy which is usually decried by physicians who appear to have no practical experience with medication of the urethra, but which is highly recommended by such men as Trousseau, Niemeyer, C. Handfield Jones, and Rosenthal, and by the most eminent surgeons." This application of Nitrate of Silver I have not found necessary. The use of the sound, together with the internal administration of the indicated remedies, has been sufficient. If, however, it should be needed in any case to complete the restoration of the

urethra to its normal condition, it will prove a certain and efficient agent. Any existing strictures must, of course, be defined and divided in the usual way, as they tend to become sources of renewed trouble if allowed to remain.

There are also internal remedies of marked efficiency in aiding the restoration of the reproductive apparatus to its normal tone and tranquillity, and obviating any symptoms of spinal irritation which may have supervened. At the head of the list. stands Atropia. In daily doses of from one-sixtieth to one two-hundredth of a grain, it has yielded in my hands the most satisfactory results. The testimony in its favor is beginning to come in. Stephanides tells of his success with it, in a single evening dose of one one-hundredth of a grain. "Dr. Nowatschek reports (Schmidt's Jahrbucher, January, 1881), a case of spermatorrhœa consequent on typhoid fever, the diagnosis resting on the presence of spermatozoa in fluid which was constantly oozing from the urethra. Iron, Quinia, and cold applications to the genitals were tried in succession with some relief. Lupulin, Camphor, and Bromide of Potassium were without effect. Atropia was then used, and the patient completely recovered in five days. Dr. Nowatschek (Journal de Medicine de Paris, October 8, 1881), cites a second case treated with equal success by the hypodermic injection, in the perineum, of a one per cent solution of Atropia."* Gross asserts; -"Under all circumstances, thirty grains of Bromide of Potassium, along with about ten drops of the fluid extract of Gelsemium, every eight hours, and one-sixtieth of a grain of Sulphate of Atropia on retiring, are worth all the other internal remedies combined. Not only does Atropia diminish the reflex mobility of the genito-spinal center, but the recent researches of Keuchel, Heidenhain, and Stricker and Spina, show that it paralyzes the movements of the cells of the acinous glands and checks their secretion, so that it cannot be dispensed with."

^{*}Medical Review. Chicago, January 1, 1882.

citation is made for the sake of its testimony regarding Atropia; not as in any sense endorsing the massive dosing with Bromide of Potassium and Gelsemium, against which a vigorous protest should be raised. To saturate the system with drugs is always a reprehensible proceeding, always a hurt rather than a help.

Agnus Castus is a remedy that, in effectiveness, comes close up to Atropia. Its direct action in extinguishing the excited conditions of the generative organs, is marked. It is well known that in the ancient feasts of Ceres, the leaves of the plant were spread upon the couches to keep licentious thoughts away. Doses of from one to five drops of the tincture, as prepared by the homoeopathic pharmacies, taken once or twice daily, have given me very gratifying results.

Hops have played a curious part among the remedies for the disorder under consideration. They have been lauded as the one great remedy, only to be quickly tabooed as altogether unreliable. So it has come about that in recent years hops have received small attention at the hands of physicians. It is possible that the preparations of the drug may have been at fault. At any rate, I find that no less a man than Dr. Geo. W. Winterburn, of New York, has had some favorable experience with the plant. He says; -- "Lupulin is the active principle of hops, existing in the strobiles, which often contain as high as eight per cent of this substance. It is a yellowish powder, and is prepared by mechanical separation from the female flowers. As many specimens of hops are nearly destitute of this active principle, the only preparations admissible are triturations of Lupulin. Our Materia Medica men are utterly silent. as to its virtues. Even Allen gives it but meagre notice. And yet it has decided therapeutic value. In spermatorrhœa it is often of great value, and in several cases I have had really extraordinary success with it. In these cases therehas been marked inability to think rapidly; pronounced lethargy of all the faculties; sense of weakness in the brain; great

nervous irritability; insomnia; and itching, soreness, or burning in the genitals. I have used it in the second, third, and sixth decimal potencies."*

Of Bromide of Potassium I cannot speak from experience, though it possesses a considerable degree of popularity. Hartshornet says of it; -- "Bromide of Potassium is, however, the medicine of the day for reducing excitability of organs subject to reflex action. Twenty grains at bedtime, every night, will, according to my observation in practice, make a great difference in those who are troubled with frequent nocturnal discharges." Burt‡ claims that it "is a precious remedy in spermatorrhœa, before the paralytic symptoms have set in; * but it must be given in from five to fifteen grains at a dose three times a day, to subdue the condition of plethera." I have already expressed my disapproval of any such bombardment of the system as this. The general experience with this drug in nervous disor ders, has been that no matter how brilliant the first results of its administration might be, ultimate disappointment was pretty sure to follow. It is not a drug which commands the physician's hearty confidence.

Smalls speaks favorably of Cannabis Sativa as having been "prescribed successfully when urethral inflammation has excited seminal emissions." Baehr has been an enthusiastic champion for Digitallin, which he regards as the remedy. It has disappointed me as much in some cases as it has pleased me in others; and probably the pharmaceutical uncertainties surrounding the preparation of the drug itself, will prevent its place being properly defined, and to a great extent thwart its possibilities of usefulness. Electricity, in various currents and modes of administration, undoubtedly deserves the high praise accorded to it in certain quarters. Here, as everywhere else,

^{*}Hahnemannian Monthly. December, 1883. †Essentials of Practical Medicine. †Materia Medica.

SDecline of Manhood.

its aid is seldom invoked until other means have failed. Its position in medicine is chiefly that of a last resort. Were it our only remedy for the difficulty in question, there is little doubt that it would be found a widely applicable and efficient agent. Cantharis, Cinchona, Conium, Ergot, Nux Vomica, Phosphorus, Phosphoric Acid, Picric Acid, and Sepia, have proved themselves serviceable in certain cases.

I have thus outlined the more enlightened treatment of to-day, not because it would be best for any one to undertake his own case. It would be folly to throw away the intelligent assistance of the physician. But the day of mysticism in medicine has passed away. A new era has dawned, and the number of those who prefer to work with the physician, understanding both the nature of their complaint, and the means used to remove it, is daily increasing. The people nowadays wish to know about these things, and it is a pleasure to minister to so laudable a desire; especially as the intelligent co-operation of the patient insures a more satisfactory result. But though the treatment so far considered belongs exclusively to the judgment and superintendency of the physician, it is not by any means the whole treatment to be employed. There is another side to the treatment just as important as the medical and surgical, which the patient alone is competent to inaugurate and see faithfully carried out.

That he must first of all relinquish his deplorable habit, has already been pointed out. That is but the beginning of his work. He must not for one moment forget that idleness is as dangerous for him as is the smell of whisky for a reformed drunkard. Occupation of mind and body during every waking moment is the great desideratum. Said Thackeray to a friend, as they one day stood gazing at the statue of Perseus grappling with the monster,—"What is your Dragon?" "Luxury and indolence," was the reply. "Ah!" said the great novelist, "those are just mine too." The only way to keep out evil

imaginations and desires, is to be filled so full with good ones that there shall not be an inch of standing room left for any thing else. Hartshorne says; -- "The true cure for slavery to this propensity is to be found in manly exercise and incessant occupation, away from all provocatives of sexual desire." And this incessant occupation must be full of purpose, or it will fail of its object. It would be useless to say I will conquer, and therefore I will walk twenty miles a day. A walk that takes you nowhere may do for recreation, but is a wretched excuse for an occupation. Such tread-mill performances will never lift any man out of the mire. Select carefully some line of action which you are satisfied to make your life work, and pitch in with all your might. The energy thus expended not being merely or chiefly a price paid for health, but just what you would be dealing telling blows upon if a Hercules, you will find that the work goes on by its own momentum; that you do not have to scourge yourself to it each morning by an irksome effort of the will; that it is easy to become completely absorbed in it, to put your heart in it. It is a grand way of killing two birds with one stone.

Do not be doubtful because you feel that your highest ambition would call you to work of head rather than hand. Some of the ways of preserving the best mental and physical health have been elsewhere pointed out. Mind and body should be not aliens, but allies. If you have the will, there will be no lack of ways for preserving a fine balance between the two. Keep your wits about you, and you will not long be in doubt as to what is the best form of exercise for your individual needs. Do not take to walking merely because it saves you the trouble of thinking out a better way. "Excessive walking," says Dr. Acton, "I find objectionable, as if carried to any extent it will produce determination of the blood to the sexual organs and subsequent emissions; the same objection may be urged against riding on horseback." So speaks an Englishman, one

of that nation of walkers. Proper attention to the physical man, if one's occupation be sedentary, will insensibly correct three of your greatest annoyances. It will change your constipation into regularity; your hot head will become cool; and your cold feet warm. How important these three points are is well illustrated by the story, already told of, Hermann Boerhaave, the great Dutch physician. Professor of Medicine at Leyden, and author of works upon the same, he left behind him at his death a richly bound golden-clasped volume which contained, as he had claimed, all the secrets of the art. When opened it was found to contain the following injunctions;—"Keep the head cool, the feet warm, and the bowels open."

Attention to the welfare of your body does not mean safety from disease alone; it means a keener wit, a stronger intellect, a clearer perception. Attention to the welfare of your body is care expended just as directly in the line of your success if your work be mental, as if it were that of the professional athlete. With purpose, then, in your physical work, and purpose in your mental work, your days may be made purposeful throughoutfilled to the brim with purposeful activity; and you will find this at the same time the shortest road to victory over salacity. Let no day stand before you as your own; but worthily preempted from its very sunrise. Idleness will ruin you. words of John Stuart Blackie, late Professor of Greek in the University of Edinburg;-"I don't know a better advice to a young man than NEVER TO BE IDLE. It is one of those negative sort of precepts that impart no motive force to the will; but though negations seem barren to keep out the devil by a strong bolt, they may prove in the end not the worst receipt for admitting the good spirit into confidence. A man certainly should not circumscribe his activity by any inflexible fence of rigid rules; such a formal methodism of conduct springs from narrowness, and can only end in more narrowness; but it is of the utmost importance to commence early with an economical use

of time, and this is only possible by means of order and system. No young person can go far wrong who devotes a certain amount of time regularly to a definite course of work; how much that portion of time should be, of course depends on circumstances; but let it, at all events, be filled up with a prescribed continuity of something; one hour a day persistently devoted to one thing, like a small seed, will yield a large increase at the year's end. Random activity, jumping from one thing to another without a plan, is little better, in respect of any valuable intellectual result, than absolute idleness. An idle man is like a housekeeper who keeps the doors open for any burglar. It is is a grand safeguard when a man can say, I have no time for nonsense; no call for unreasonable dissipation; no need for that sort of stimulus which wastes itself in mere titillation; variety of occupation is my greatest pleasure, and when my task is finished I know how to lie fallow, and with soothing rest prepare myself for another bout of action. The best preventive against idleness is to start with the deep-seated conviction of the earnestness of life. Whatever men say of the world, it is certainly no stage for trifling; in a scene where all are at work, idleness can lead only to wreck and ruin. 'Life is short, ART LONG, OPPORTUNITY FLEETING, EXPERIMENT SLIPPERY, JUDG-MENT DIFFICULT.' These are the first words of the medical aphorisms of the wise Hippocrates; they were set down as a significant sign at the porch of the benevolent science of healing more than 500 years before the Christian era; and they remain still, the wisest text which a man can take with him as a directory into any sphere of effective social activity."

The bath is another important factor in the treatment dependent upon the patient's own doing. The importance of general and local cleanliness has been elsewhere considered. There remains for our consideration here only the stupid blunder of cold affusions so generally recommended for the difficulty in hand. If you want to know about the calming influence of

cold, freeze your ears and note the result. It is nonsense to talk of cold affusions to a man suffering from genital irritability and excitement. From them he can get only momentary advantage, and that, too, at the price of subsequent aggravation of his complaint. Any one who has noted the effect upon the hands of immersion in hot water, will be prepared to expect benefit from hot rather than cold affusions. And this expectation is verified by experience. Hot sitz-baths are decidedly helpful. Such a bath, prolonged to ten or fifteen minutes, night and morning, you will find one of your very best aids.

There are certain self-denials which no man will object to put in practice who is sincerely desirous of being lifted out of the pit into which he has fallen. In matters social there are three restrictions which suggest themselves as being eminently sensi-They have reference to bed-time, the dance, and the thea-On the first point, you will be wise to make it your rule to be in bed by half-past nine or ten o'clock. Remember, you are to be a man with purpose; and no young man who hopes ever to accomplish anything in this world, can afford to keep later hours than these. Rise in the morning as early as you please, but retire promptly between nine and ten. Of course there will be exceptions to this rule, but be sure that you don't turn the matter about and make the rule the exception and the exception the rule. And don't construe the suggestion as an indirect hit at social intercourse. Go straight into good company whenever you have the time to do so, and carry a clean, honest, hearty face into it, and an honest heart which is fully resolved now and forever to do and think the right, no matter what the sins and mistakes of the past may have been. Such a mingling as this in the company of those who are your natural companions, will strengthen and help you. It is greatly to be preferred to solitude afar off. In the words of Thackeray, "all amusements of youth to which virtuous women are not admitted are, rely on it, deliterious in their nature. All men who avoid

female society have dull perceptions and are stupid, or have gross tastes and revolt against what is pure." "There is no doubt, however, says" Dr. Hartshorne, "that some of the amusements which are popular, and some usages of society, make more easy the fall of young men into destructive habits. The ballet and melodramatic pantomime, the waltz, and the "German' excite sexual feelings and impulses for which, with the unmarried, there is no legitimate gratification."

This brings us to the second point, that of the dance. This is not the place to enter into a discussion of the merits and demerits of the dance of modern society. It is a question upon which good people, people sincerely desiring to do right, differ. Our inquiry is not what may be best for mankind in general, but what is best for him who is suffering from a specific physical weakness. Our desire is to recognize and put far from us any impediment to the recovery of our perfect manhood. Unquestionably the dance is an impediment, and a serious one too. There is no one who has sinned and suffered, who sincerely labors and longs for restoration rather than for the pleasing of a depraved appetite—there is not one who does not know that the dance ranks among his worst enemies. Do not touch it, do not have anything to do with it, as you value your life. What society in general may think about it is nothing to you; you must avoid it as a sick man would poison. Possibly the well may be able to stand it. That is none of our business just now. Because they all do it, is the poorest reason in the world for doing anything.

As for the theatre and opera, steer clear of them, and the dry rot with which they honeycomb their followers. Notice the difference between the theatre and the dance. The mechanics of the dance tend to excite local impulses which were better without such stimulus; the plots of the stage paralyze all sense of the earnestness of life, befog the distinctions between right and wrong, virtue and vice, represent the sum of that life which

is worth living as a nondescript haggis of love and lust, and so from the opposite sphere of a man's being, excites the same undesirable stimulus to lechery. It is true that with the theatre, as with the dance, the cogent objection may be raised of

late hours. But that is not the real point at issue. The final stand made for the theatre is upon the ground of the Shakespearean drama. I do not see that the theatre can logically hold this ground for one moment. That the works of Shakespeare may be of great value for their wit, wisdom, and pathos, is by no means a reason why their spectacular presentation should be ought else than brutalizing. We were glad to have our households read in our newspapers that Guiteau had been executed, and thereby justice satisfied and the law vindicated. should we feel if they went night after night to see the execution dramatized, its hideous reality brought out as perfectly as The difference between reading and dramatizing may * ssible. the difference between reading with obedience the decalogue, and haunting scenes of robbery, murder, and prostitution. All men unite in paying homage to the character of Jesus the Christ, and all were likewise condemnatory of the proposition to put any portion of the New Testament scenes upon the stage. It won't do for us not to see distinctions clear as daylight.

The historical defense is the most flimsy of all. The significance of history does not lie in the clothing men have worn. The dress of William Shakespeare is a matter of altogether minor importance; and we shall never understand the A B C of history until we learn that the power of Washington was not found in his wig, nor the poetry of Longfellow in the cut of his Sunday breeches. "In addition to the evidence of play actors and managers who have testified as to the pernicious influences of the theatre upon its employes, I have this morning the evidence of Macready, a name mighty in theatrical circles, a name mighty all the world over. Macready, after retiring to Sherborne, England, in the evening of his days, wrote these words:

'None of my children, with my consent, under any pretence, shall ever enter the theatre, nor shall they have any visiting connection with play actors or actresses.' Macready ought to know." "A converted actor once said to me, while passing a play-house in which he had often performed: 'Behind those curtains lies Sodom.' Although sorely pressed to return to his old business he said that he would starve sooner than go on the stage again. Mrs. Francis Kemble Butler-the last living representative of the most famous histrionic family of modern times—has, in her old age, condemned the stage emphatically. As an institution, the American theatre tolerates sensual impurity in its performers, and presents scenes of impurity to its patrons. If you become one of its patrons, you go into moral partnership with the theatre." The theatre eats out from within the real manhood and the real man, and leaves nothing but the thin shell to hide the hollowness within. You cannot afford to submit yourself to any such corrosion.

There are certain personal habits the careful supervision of which will well repay you in vantage-ground gained over the common enemy. Novel reading should be strictly avoided. Not the reading of the questionable novels merely, but of all novels. Warmly seconding all the applause which has been offered the great writers of fiction, I only insist that you are a sick man, and that the best novel is not the diet for one sick with your disorder. I fear me that you would be the worse for Scott's "Ivanhoe," or Dickens' "David Copperfield." Your ideas of romance have become abnormal through dissipation, and their best restorative is absolute rest. Therefore you will do well to make your reading as utilitarian as possible. Arts and sciences are the best of tonics for you.

Tea and coffee are two hindrances from which you will do well to free yourself. They are both exciting, and excitants are

^{*}Dr. T. De Witt Talmage. †Dr. T. L. Cuyler.

just what you are aiming to avoid. Acton speaks so strongly as to say that "tea, coffee, and tobacco I look on as so many poisons for persons suffering under the nervous depression such as we are here speaking of." If you prefer a warm drink, in chocolate you will find one free from objectionable qualities, and which is a valuable food as well. In the form of the broken bean, which is known in our markets as "cocoa," it is far less valuable as a food, the decoction made from the cocoa failing to represent the nutrient elements. "Used in this way, only a portion of the kernel is extracted and consumed, and the beverage presents a closer analogy to tea and coffee than that derived from the other cocoa products, which, from being prepared in such a way as to lead to the whole substance of the kernel being drunk, furnish liquids possessing in addition to the common properties of the class, a high nutritive value. In the other preparations of cocoa, the kernel is ground to a paste and usually incorporated with some diluting material of a starchy or saccharine nature to diminish its oily consistence. late constitutes a superior form of prepared cocoa. Containing, as pure cocoa does, twice as much nitrogenous matter, and twenty-five times as much fatty matter as wheaten-flour, with a notable quantity of starch and an agreeable aroma to tempt the palate, it cannot be otherwise than a valuable alimentary material. It has been compared in this respect to milk."* The complaint that we sometimes hear made of chocolate, as being too gross and heavy for delicate stomachs, arises from the practice of unscrupulous manufacturers who express from the bean its natural oil (which no exposure can render rancid), and sell it to the pharmacist as "cocoa butter;" and then add beef suet to their product for the sake of appearances.

It is impossible to enter upon the consideration of any topic involving the well-being of the nervous system, and ignore the tobacco habit. The inter-relations of the two are so important

^{*}Pavy on Food and Dietetics.

that they cannot be overlooked. Yet the question of the use of tobacco is ordinarily discussed with so little candor and logic, with so much bias and heat, that one dislikes to approach it. Perhaps we may best preserve our tempers by asking some of the more eminent in medicine to speak first. Dr. William A. Hammond said recently; -- "If children smoke cigars they destroy their nervous systems before they are fully formed, and render themselves liable to neuralgia and various functional diseases of the brain which are certainly calculated to destroy their mental force. There is also some evidence to show that tobacco in young persons actually interferes with the development of the body in regard to size—that it stunts their physical system. It certainly impairs digestion, for they cannot use tobacco without spitting inordinately. The saliva expelled from their bodies is one of the most important of the digestive fluids, and the proper digestion of the food in the stomach is materially interfered with when there is not enough saliva left to mix with their food before it is swallowed. Again it certainly impairs hearing and eyesight. I have seen several instances of young children having their eyesight injured seriously, if not irreparably, by the use of tobacco. The excessive use of tobacco is injurious to everybody, adults as well as infants, male as well as female.

"Now as to cigarette-smoking. It is injurious to everybody, practiced as it ordinarily is by inhaling the smoke in the lungs. The use of cigarettes has been increasing to a most extraordinary degree in this country in the last ten years. I have already seen the ill effects of it in my practice, in the production of facial neuralgia, insomnia, nervous dyspepsia, sciatica, and an indisposition to mental exertion. In young persons all these effects are seen with much greater intensity and, consequently, the effect upon them is very much worse than upon adults. In France the difference between those who smoked cigarettes in the polytechnic schools and those who did not, as regarded

their positions in their classes, was so great that the government has prohibited absolutely the use of tobacco in all the government schools. Some time ago I was consulted by Commodore Foxhall Parker, then superintendent of the Naval Academy at Annapolis, relative to the advisability of allowing the cadets to smoke. He stated in his letter that it was almost an impossibility to prohibit the practice, and he put the question whether it wasn't better to allow them to smoke under regulations than to punish them constantly for violation of rules. I replied that that was a matter of discipline; but that, so far as the effects of tobacco were concerned, I had no hesitation in saying that its influences would be injurious to the cadets, and that I had constant evidence of it in my private practice and in the course of my observations otherwise. Commodore Parker replied that he thought what I said was right."

Dr. Lewis A. Sayre puts himself on record as believing that "cigarettes are worse for boys than pipes or cigars. nicotine absorbed from the cigarettes has a very bad effect upon the nervous system, and, taken in excess, weakens the action of the heart and in that respect diminishes the force of the circulation of the blood. This necessarily impairs nutrition of the tissues and of the brain itself, independent of the poisonous influence of the nicotine upon the brain and nerve tissues. Dryness in the mucous membrane of the fauces and larynx is produced, and boys who smoke cigarettes are mostly in the habit of expelling the smoke through the nostrils, which produces the same dryness of the mucous membrane of the nares. make chimneys of their noses by exhaling this dry, hot air, and destroy the natural sweetness and liquidity of the tones of their voices. Every boy who expects to become an orator, with a liquid voice, should never smoke a cigarette. The habit also causes loss of appetite. If boys smoke cigarettes over night, they have no appetite for breakfast, and a growing boy who has no relish for his meals is being retarded in his growth and

development. It results in a nervous trembling of the hands, and, carried to excess, cigarette-smoking affects the memory. I think paper cigarettes are worse than tobacco cigarettes. It may be because the paper absorbs more of the nicotine, which is thence carried into the system. Certainly the paper cigarette has the worse odor."

"Sir Benjamin Collins Brodie, who was the most eminent English surgeon of his generation, not long before his death sent a communication to the London Times in which he gave the result of his observations on the effects of tobacco. He was free to concede that its occasional use by men of such active and exposed outdoor life as sailors, soldiers and explorers might not only be harmless but perhaps beneficial. But he expressed the opinion that there are very few tobacco-users, even among a people of such active outdoor habits as the English, who do not suffer harm from it, and summed up his judgment in the pithy statement, 'I cannot entertain a doubt that if we could obtain accurate statistics on the subject, we should find that the value of life in inveterate smokers is considerably below the average.'

"Dr. Willard Parker stands at the head of his profession in New York City, I suppose. He does not hesitate to say—in his own handwriting, which lies before me now—that he believes tobacco is really doing more harm to-day than rum. To quote his own words still further: 'I am sure that in health no one can use tobacco without detriment to body, mind and soul. It is a poison which slowly but surely destroys life, and a man who uses it to any extent is as old at fifty as he would be at sixty without it. All who smoke or chew much are more apt to die in epidemics, and more prone to apoplexy and paralysis than other people. The duty of abstaining from the slow killing of one's self by tobacco is as clear as the duty of not cutting one's throat. I apprehend the day is not far distant when the life insurance companies will inquire into the influence of

tobacco poison on longevity as they have done in regard to alcohol. They have ascertained that the average of life of such as become intemperate at twenty is thirty-five years and six months; while the young man of sobriety has an average of sixty-four years and two months. There have died in New York within a few years three excellent clergymen, all of whom would now be alive had they not used tobacco.' It is of interest to note, too, that Dr. Parker pronounces smoking more harmful than chewing or snuff-taking.

"Dr. B. W. Richardson, the eminent London practitioner who has made a specialty of careful investigations into this and kindred causes of nervous disease; who is a man of marked candor and loyalty to facts, wherever they may lead him; whose researches are taken by Chambers' Encyclopædia as the basis for its treatise on tobacco; who is sometimes quoted, on the score of his earlier conclusions, as lenient toward a moderate indulgence in cigars, gives the verdict of his fuller investigation in his well-known volume on 'The Diseases of Modern Life.' He declares that in the confirmed smoker there is 'a constant functional disturbance,' which extends to the blood, the stomach, the heart, the lungs, the brain and the nerves. That does not leave very much of a man but his hair and his bones! He says that the use of tobacco gives a doubtful pleasure for a certain penalty—that so long as the practice is continued the smoker is out of health; his stomach only partially digests, his heart labors unnaturally, his blood is not fully oxidized. So distinct and so certain are its effects that if a community of youths of both sexes, whose progenitors were finely formed and powerful, were to be trained to the early practice of smoking, and marriage were to be confined to the smokers, a physically interior race of men and women would be bred. From the purely hygienic point of view he unqualifiedly pronounces the use of tobacco in any form a habit better not acquired, and when acquired better abandoned. There is much

more evidence of the same sort. But we do not need it. Whatever the legion of smoking physicians may say—estimable men and successful practitioners as they may be—after this concurrent testimony from three such witnesses as Brodie, and Parker, and Richardson, I cannot be left in any doubt on the subject. I do not believe three men to match them can be found in the medical profession of the whole world who will give as unqualified approval as they give unqualified condemnation of the use of tobacco.

"Every one knows, too, how smoking prevails in the English universities. Yet, it is said that nine-tenths of the first-class men at Oxford and Cambridge are non-smokers. You have seen, perhaps, some suggestive statistics bearing on the relations of tobacco to scholarship, which were taken at Yale College a year or two ago. Each class at Yale, it seems, is graded in four divisions according to scholarship—the best scholars being in the first division, while the fourth is made up of those who are barely able 'to hang on by their eyelids.' The census of one class showed that only ten out of the forty in the first division were addicted to smoking. In the second division eighteen out of thirty-seven used tobacco; in the third, twenty out of twenty-seven; in the fourth, twenty-two out of twentysix. It might be rash to say that this was a clear case of cause and effect, but I am sure it would be more rash to deny any such relation. In the same line is another fact which is a matter of history. In 1862 the Emperor Louis Napoleon had his attention called to the phenomenon that there were more than five times as many paralytics and lunatics in the hospitals of France as there were thirty years before, and that the increase of government revenue from the tobacco monopoly had risen meanwhile in almost the same proportion. He appointed a commission of scientific men to examine whether this was a case of cause and effect, or only a coincidence. They devoted their special attention to the young men in the government training schools. Dividing the students into two classes, as smokers and non-smokers, they found the latter so much superior, both physically, mentally and morally, that the Emperor at once prohibited the use of tobacco by the students in these schools, breaking in one memorable day the pipes of thirty thousand young men in Paris alone. When I hear any one 'sniffing' at the rule enforced in some of our Western colleges forbidding the use of tobacco by students, I always take pleasure in referring them to Louis Napoleon. He was not supposed to be fussy or puritanical.

"Dr. Parker says he has known a man to consume seventy grains of opium a day—but then that was all the work he did! And as to Gen. Grant—he is by no means an old man yet, and I do not know what the end will be. He was not an habitual smoker until he entered upon active campaigning in the late war. And his brilliant friend, Senator Carpenter, died recently, his system a pitiful wreck when, so far as years went, he ought to have been in the prime of his power. And I notice that one of Senator Carpenter's acquaintances writes of him: 'Died of smoking twenty cigars a day.'

"But the assumed merit of this sedative is really its serious mischief. As some one has said, so forcibly, 'Smoking is an unmanly leaning on a solace to care and labor neither sought nor needed by women; enabling the smoker to be idle without growing weary of idleness; tending to take the ambition out of him, and to make him happy when he should be miserable, and content when his divinest duty is discontent."

Dr. Roberts Bartholow asserts that "It is high time that something were done to put a stop to this frightful evil, which is stunting the growth and ruining the health of thousands of boys." Dr. Frank H. Hamilton says;—"Tobacco causes neuralgia, paralysis, especially of the nerve of vision, tremors, etc. It impairs the appetite, dries up the fluids, gives a dirty, parch-

^{*}J. B. T. Marsh, of Oberlin College.

ment color to the skin, stains the teeth, makes the gums spongy and tender, renders the breath foul, and causes not unfrequently cancer of the mouth, lips and tongue."

Such testimony might be multiplied almost indefinitely did space permit. It has been prohibited in Phillips Exeter Academy, New Hampshire, and in the U.S. Military and Naval Academies of West Point and Annapolis. One school in Philadelphia has a statement of the pernicious effects of tobacco pasted inside of the cover of every text-book. If its use by those in ordinary health be so objectionable, it is hardly necessary to point out the added force of the objections to its use when the user is one suffering from spermal ejaculations of abnormal frequency. It fully justifies Dr. Acton's epithet of "poison." It has a directly poisonous effect upon the reproductive apparatus itself. Dr. Jaquemart, in a late number of one of the medical journals of Paris, affirms that abuse of tobacco renders men impotent. It has a directly poisonous effect upon the general nervous system, which has at least one destructive force attacking it already. It has a directly poisonous effect upon that purposeful character which alone gives significance to life. The assertion is made that at Harvard no smoking student has graduated at the head of his class in the last fifty years. I do not fancy that we are to attribute this only or principally to its unfavorable physical effect. In the very nature of things, students of the best purpose have no time and no energy to waste on tobacco. Its use is either an exceptional inconsistency of character and habit, or else it is somewhat of an index of the earnestness of that character. "I do not advise you, young man," says Dr. Oliver Wendell Holmes, "to consecrate the flower of your life to painting the bowl of a pipe, for, let me assure you, the stain of a reverie-breeding narcotic may strike deeper than you think. I have seen the green leaf of early promise grown brown before its time under such nicotian

regimen, and thought the amber'd meerschaum was dearly bought at the cost of a brain enfeebled and a will enslaved."

One hundred years ago it might have been necessary to speak of alcoholic beverages at some length, as we have of tobacco. At this late date it would seem uncalled for. That alcohol inflames the passions is notorious. Besides this, "the perceptions, the emotions, the intellect, and the will, are all implicated to a greater or less extent. The power of application, of appreciating the bearing of facts, of drawing distinctions, of exercising the judgment aright, and even of comprehension, are all more or less impaired. The sense of right and justice which the individual may have had is so weakened or destroyed that he will lie, steal, murder, or commit other outrages, even when there is no provocation." That you should refrain from all beverages containing even the smallest percentage of alcohol, goes without saying.

After all, we must constantly turn from the special to the general, if we would pursue an even course. The danger and damage of sin against one's own body, and the measures by which the physician and patient, as co-workers, can redeem the lost manhood, have been considered in detail. Yet I would not have your mind occupied with these details. Do not let your mind rest upon them. If our eyes are constantly fastened upon the ground in search of pitfalls, we shall never see the snow-crowned Alps. We must not stand guard over evil, but pursue the good. The topic which we have been discussing is only one department of self-knowledge, and the whole of self-knowledge is only one member of the trinity which should be ours. For

- "Self-knowledge, self-reverence, self-control—
- These three alone lead on to sovereign power."

"Let every one, therefore," says Professor Blackie, "who would not suffer shipwreck on the great voyage of life, stamp

^{*}Hammond on Diseases of the Nervous System.

seriously into his soul, before all things, the great truth of the Scripture text,—'One thing is needful.' Money is not needful; power is not needful; cleverness is not needful; fame is not needful; liberty is not needful; even health is not the one thing needful; but character alone—a thoroughly cultivated will—is that which can truly save us; and, if we are not saved in this sense, we must certainly be damned. There is no point of indifference in this matter, where a man can safely rest, saying to himself, If I don't get better, I shall certainly not get worse. He will unquestionably get worse. The unselfish part of his nature, if left uncultivated, will, like every other neglected function, tend to shrink into a more meagre vitality and more stunted proportions." Lord Byron was a monumental example of one who was "not saved." And on his thirty-sixth birthday he wrote of himself;—

"My days are in the yellow leaf;
The flowers and fruits of love are gone;
The worm, the canker, and the grief
Are mine alone!"

Somewhere in ancient story it is narrated of a certain tyrant that, for some fancied affront, he condemned a noble woman to ride naked upon a horse's back through the streets of her city. The hour comes, and her city remembers her. Her honor is their own. The streets are deserted. No living thing is to be seen. Doors and windows are impenetrably draped. Even the cooing doves upon the housetops feel the mighty throbbing underneath that solemn stillness, and fly to their little homes to hide their heads under their wings. Silence greater than that of nature's fastnesses, for it bears the added emphasis of the designedly deserted. Startlingly is the stillness broken by the loud clatter of hoofs upon the pavement, as the horse and rider dash through the streets. Fearlessly does she ride, in a nobleness of seclusion before which that of her own inner chamber becomes coarse publicity. Ride on! Ride on! O daughter of

the people! Never were kings' daughters adorned with such a peerless vesture. Clothed upon with loyal hearts, thou hast a garment compared with which all loom-created coverings are beggarly.

Young man, what mounted figures ride through the streets of your imagination? Can this stainless rider, with perfect safety, turn her horse's head up the street on which you have your dwelling? Will the matchless garment which she wears, crumble into dust before the house in which you live? Then rest not day nor night until your heart's hottest tears, falling upon the white, upturned face of your manhood lying dead, shall call it back to being and to life.

"This is peace—
To conquer love of self and lust of life,
To tear deep-rooted passion from the breast,
To still the inward strife;

"For love to clasp Eternal Beauty close;
For glory to be Lord of self; for pleasure
To live beyond the gods; for countless wealth,
To lay up lasting treasure

"Of perfect service rendered, duties done
In charity, soft speech, and stainless days:
These riches shall not fade away in life,
Nor any death dispraise."

CHAPTER IX.

THE VENEREAL DISEASES.

Roman mythology, among its various deities, included a goddess bearing the name of Venus. This name is still a familiar one through the ministry of art, by which means we have come to consider it as standing for the perfect type of female beauty of person. The ancient Romans did not hesitate to put an even better meaning into the word. For with them Venus was the goddess of love and of spring. But the mythology of the nation reflected so faithfully the morals of its people, that Venus must needs be degraded by being made the goddess of sexual debauchery as well. And so it comes about that we have a dishonorable word coined from her name. The word "venereal" has its root in the name of this goddess; and by venereal diseases is meant those diseases arising from illegitimate sexual intercourse.

Primarily, they are three in number, and are known as gonorrhœa or clap, chancroid or the soft chancre, and syphilis; the first symptom of the latter being what is known as the "hard" or "indurated" chancre. Each one of the three is dependent upon a specific animal poison for its propagation, just as is scarlet fever or small-pox. Like them also, the disease must be introduced by the poison coming in contact with the organism through some agency from without. But here the analogy ceases. In the venereal diseases atmospheric contagion and epidemic influences are absolutely unknown. And although some material which has been in contact with the poisoned secretion of a diseased person may carry the poison to a healthy

subject, and inoculate him with it through some abraded surface or delicate mucous membrane, yet such an accident is exceed ingly rare. With an exception here and there so uncommon as to be unworthy of notice, the venereal virus is communicated through the sexual act. More than this, the poison of syphilis, which is the most formidable of the three by far, once received into the system seems never to be banished from it, and years after its apparent disappearance it may stamp its blight indelibly upon the unborn child and the infant. The wide difference, then, between this poison and that of contagious and infectious diseases of other classes, is readily seen without further comment.

It has been already stated that the venereal diseases are due to illegitimate sexual intercourse. It is true that they may be communicated in the lawful exercise of the function. vicious may wed the innocent, and the innocent suffer that which they abhor, both in person, and by entailment upon offspring. But we have wandered into exceptions again, while the great central truth is that these curses follow the profligate, and breed in houses of ill-fame, and riot in sexual debauchery and prostitution. Within a generation or two the frightful scourge of these venereal poisons would disappear from the face of the earth were the "social evil" to cease to exist. This sin against chastity is directly responsible for the presence of these diseases in the world to-day. But for this iniquity, constantly acting, they would become a matter of history. They flourish or wither just in proportion as lust or chastity holds sway. So it is fair to speak of this scourge as due to the gratification of lawless lust.

Yet it cannot be positively asserted that through this lechery the virus of syphilis or gonorrhœa was first generated; that the violation of the command, "Thou shalt not commit adultery," by those who, before, were pure in life and body, supplied the necessary conditions by which this worst of poisons known to man sprang into existence. Its origin is lost in the twilight of history. Its ravages are as old as the centuries. record of its first beginnings. From remote antiquity accurate descriptions of these diseases, as then prevailing, have been handed down to us. And to-day they so run riot among the profligate by virtue of their highly infectious properties, that it is impossible to determine whether or not they arise independently of contagion, called into existence solely by the conditions offered in lewd practices. That such is the case has been asserted in the hearing of the present writer by a teacher of this department in one of our best medical schools; while, on the other hand, Drs. Simes and White say that "Syphilis is communicated only from individual to individual, and never appears de novo;" but it is a question not often discussed. Learned authorities canvassing what they are pleased to term the "origin" of these disorders, are pleased to consider under that head their history only. This is true almost without exception. They are satisfied to take these diseases as they find them, and as they have been found in the past, and pass by any speculations as to just how they may have had their rise. Science is supposed to be very particular regarding the accuracy of its statements. But whatever refinements of statement and demonstration technical science may require of us, the great practical fact of the case is that the venereal poisons are to-day perpetuated, and to a frightful extent propagated, by licentious practices; that they have always been, as they are now, the badge of lewdness; that they would cease to exist were lustful orgies to be known among men no more; that they have their origin in salacity, their strength in lechery, their life in lust, their whole power and meaning and measure in sexual debauchery.

That the divine law for the good order of society should be enforced with such traly terrific penalties, is enough to compel the attention of the most thoughtless. That the mere disregard

of the institution of marriage, which we have been accustomed to look upon as a purely moral regulation, should result in profound organic disease of the body, shows how truly that institution is a divine, or, if you please, a natural, one. For as, humanly speaking, all law is of government, and all government of law, so, likewise, in the highest sense is it true that all natural law is divine, and all divine law natural. So it is with marriage. It may be a surprise that profound material changes should result from the violation of what you have always considered a purely moral law. It is a natural law as well. And the penalties of natural law are severe and inexorable. Disregard for one little moment the law of gravitation, and you are dashed to pieces. Stand upon ice only just a little too thin to bear your weight, and it costs you your life. So the only safe way is the nature-al way. In our haste we write it "natural," and forget what it means. And the natural way is the divine way. love nature, to be natural, to live naturally, -how much it To love and be and practice the opposite,—what tremendous disaster it invites. Here we catch a glimpse of the true explanation of that destruction following close upon the track of both solitary vice, and guilty sexual commerce. The cold logic of the cosmos, unwarmed by the faintest perception of right and wrong, should teach us to expect as swift and fatal explosion when the fires of lust attack the structure of society, as when the fire of the fuse attacks the structure of the dynamite.

I would not be misunderstood. These few chapters will have failed of their purpose if they convey the impression of an indirect declaration of war against pleasure. Asceticism is not lovely, and has no attractions for a healthy-minded boy or man. Were any reader to follow these lines with a feeling akin to that of the small boy when he complains, "Pa won't ever let me have a good time," it would prove either his blindness or the failure of these pages to make themselves understood. Seldom has anything had a more pleasant sound than the saving of a

Christian man, poor, and the head of a large family, spoken a few days ago: "I will live happy, or I won't live at all." The pursuit of happiness is noble, the pursuit of pleasure is right and proper. The giving of pleasure to others is one of the sweetest graces. But "fly the pleasure that bites to-morrow." To expose pain, masquerading as pleasure, but "biting like a serpent and stinging like an adder," is the present aim. This is to be, not the enemy, but the faithful friend of pleasure.

"Pleasure, or wrong or rightly understood, Our greatest evil or our greatest good."

To be unhappy and sour is not only wrong—it narrows and diseases head and heart as well. "In so far as individuals have succeeded in overcoming the smile and joy of earth, to that distance have they also blighted the other natural powers of the soul. In the effort to overthrow pleasure, these men have dragged down all else. The mind hastens to pass into a stupor when it has become convinced that there is nothing around it worth living for. The more the ascetic-be he Pagan or Christian, be he Stoic or a Fakir or a Monk-limits the horizon of pleasure in the best sense of that word, the more he limits the outreachings of the mind and heart, and contracts the powers and works of his life. A suicide is a man whose heart has become perfectly emptied of joy and the hope of it; and next to the suicide stands the ascetic, who holds the theory of the suicide but in a less real form; he has the faith or creed of the suicide, but has not yet risen to his practice.

"A classic orator once spoke so powerfully about the worthlessness of human existence that his addresses were always followed by a sudden increase of suicides. We who from our happier era look back, cannot but feel that the hatred some of our ancestors cherished for pleasure, made the world seem so small and ill-deserving that they did not care to extend toward it their esteem or their charity. From the years which they had sown broadcast with their hatred of laughter, they reaped a harvest of indifference and coldness of soul. * * *

"Happiness thus revealing itself as a lawful and noble and universal pursuit, it must now be asked what happiness is it that is so lawful and noble? It must be a happiness that does not conflict with morality. Pleasure sought by a violation of any law of health or of conscience or of society, is only a pain delayed. The so-called 'daughters of joy' are the daughters of infinite grief. * Happiness is much like money—money must represent an actuality. It must stand for some stored-up labor of individual or nation. If a man has earned a farm or a house or has digged a pot of gold, he may issue bills of paper almost to the amount of value in his farm or house or pot of gold; but should he issue checks or drafts to ten times the value of his reality, his bills must decline to ten cents on the dollar so as to harmonize with his possessions. No man and no State, however powerful, can create a value. No State can make land or make a wheat-crop. Their bills of exchange must represent what is. * It is much thus with pleasure. Man cannot wander much beyond his absolute possession of power and right. An over-drinking, an over-eating, an over-tax of mind or body is an over-issue of drafts; and lo, on the morrow, an awful depreciation of body and mind and soul is reported on street and 'change and in the church circles, and in that most tender and tearful place—the home. You see on the streets daily persons, male and female, who years ago discounted too heavily their future, and now the time is out. The health of the body and of the mind, the welfare of self and of society, the eternal laws of Godthese are realities upon which all may issue their pleasure-notes, but the instant you go beyond these actualities you become a defaulter-you are no longer in the vale of pleasure, but of pain."

^{*}Professor David Swing in Motives of Life.

There are some very good people who talk to us about pleasure, and gain our assent and attention, and then at the last suddenly change the quality of all they have said by adding "we mean pleasure in the best sense of that word." Although their intentions may be of the best, it is not a square and honest way of doing. We don't like it. We ought not to like it. They have gained our mental sanction of what they have been saying, by a trick, and we should always have a sturdy contempt for tricks. They have made sure that we should not dissent from their propositions as they laid them down, by keeping us in ignorance of their real meaning. They have attempted to entrap us into an indorsement of what we do not believe; and for the sake of mental honesty we ought to resent it. It is right that we should. No such trap has been set in these pages. When the words "pleasure" and "happiness" are used, they are used in the ordinary and commonly accepted sense; if you will, in a worldly sense. In the most earthy sense imaginable, it would not pay to spend a fortune in one single day of feasting and revelry in the midst of luxurious surroundings gorgeous beyond description, only to wake on the morrow to a life of want and hunger and misery and disease. It would not pay, though judged by no higher standard than how to get the most bodily enjoyment out of a given amount of money. Men governed by no other motive than this would be unanimous in pronouncing against such a course. So it is with pleasure set over against the courtesan. There is no sense in which the word pleasure can be used which is worldly, earthy, low, sensual, devilish enough to make it true that the house of the harlot is anything else but a bitter cheat as a source of pleasure. "Truly," says the French savant, Dr. Bourgeois, "man ought to know well all the evils with which he is threatened by the abuse of sensual pleasures. He ought to know what these mistakes of a disordered passion, these intoxications with immoderate lust, must

cost for his soul, for his body, for his health, for the duration of his life, for his progeny."

Forewarned is forearmed. The pulpit, the professor's chair, the teacher's desk, have not been sufficiently explicit here. must use plain speech if we wish to be understood. We must be definite if we wish to accomplish anything. Generalities go for nothing. When the subject is approached at all, it is with such very thick gloves that the youth is left with the impression that some vague spiritual detriment is predicted; and too often in the youthful mind the spiritual is set down as synonymous with the unreal. He should be made to understand, distinctly that this matter is as real as leprosy and as grim as death. He should be taught four things. First, That the Bible gives an accurate account of the matter, closely describing its every-day workings, and emphasizing its physical penalties, as well as those pertaining to character. Second, That the evil really exists; is practical, not theoretical; and that he himself will surely be called upon, sooner or later, to meet this temptation. Third, That successful men of affairs in the world are keenly alive to the danger and the disaster which hover round all those over whom the social evil has thrown one little corner of its black, leprous mantle. Fourth, Just what the diseases entailed are, as encountered by medical science.

I. It is not necessary to transfer to these pages the long code of the Mosaic law against every kind of social uncleanness. It lies before us in an open book. We all know where to find it, and may read if we will. They are stern regulations, those statutes of the Hebrew lawgiver, with their free use of the death penalty. But I would copy for you here what you may not have read, and very possibly might not know where to find. They are not the words of inspiration alone. They are the words of experience as well. Solomon was a king. His reign did not fall within those years marked by the simplicity and frugality which attend the earlier years of a nation's founding. Neither did he sit upon

the throne in the days of decadence and disaster, when we might justly expect to hear the sombre utterances of one filled with musings as to the cause of the nation's downfall. On the contrary, he sat in the seat of supreme power when the nation he ruled was at the very summit of its career. Surrounded by all the luxury and magnificence of untold wealth and unlimited power; king and people alike enjoying an unparalleled prosperity; he himself gifted with distinguished wisdom; at once king, poet, philosopher, architect, of fine presence, generous and sympathetic, yet living in an age in which the natural law governing marriage was as little understood as the natural law governing the telephone, it would seem that no better conditions could possibly be brought together for the making of a scientific experiment which should finally settle the social question.

And he made the experiment. Made it with a harem numbering one thousand inmates. Made it not for himself alone, but for our benefit as well. For he does not keep silence. He has a great deal to say about these things. And no one has a better claim upon our attention. In the words of a British surgeon; "If you will not believe the bachelor Paul in his denunciations of fornication, listen to the old rake Solomon, who knew more about this matter than most men." But before we hear what he has to say, let us be sure that we understand his language. We shall find him speaking of the "strange woman." By that term is meant precisely what we understand the words harlot and prostitute to mean. It may be an unnecessary explanation; but I well remember reading some of Solomon's words when that phrase was to me an entire mystery, and the warnings therefore uncomprehended. In matters of great importance we cannot afford to run even small risk of misunderstanding.

With this explanation, what do we find his testimony to be? The first thing we come upon in his writings regarding these

matters is this: "When wisdom entereth into thine heart, and knowledge is pleasant unto thy soul; discretion shall preserve thee, understanding shall keep thee: * * to deliver thee from the strange woman, even from the stranger which flattereth with her words; which forsaketh the guide of her youth, and forgetteth the covenant of her God. For her house inclineth unto death, and her paths unto the dead. None that go unto her return again, neither take they hold of the paths of life." We turn over the leaf and come upon this: "For the lips of a strange woman drop as a honeycomb, and her mouth is smoother than oil: but her end is bitter as wormwood, sharp as a twoedged sword. Her feet go down to death; her steps take hold on hell. Lest thou shouldest ponder the path of life, her ways are moveable, that thou canst not know them. Hear me now therefore, O ye children, and depart not from the words of my mouth. Remove thy way far from her, and come not nigh the door of her house: lest thou give thine honor unto others, and thy years unto the cruel: lest strangers be filled with thy wealth; and thy labors be in the house of a stranger; and thou mourn at the last, when thy flesh and thy body are consumed, and say, How have I hated instruction, and my heart despised reproof; and have not obeyed the voice of my teachers, nor inclined mine ear to them that instructed me. * * And why wilt thou, my son, be ravished with a strange woman, and embrace the bosom of a stranger? For the ways of man are before the eyes of the Lord, and he pondereth all his goings. own iniquities shall take the wicked himself, and he shall be holden with the cords of his sins. He shall die without instruction; and in the greatness of his folly he shall go astray."

Still is he not satisfied. Soon he takes up the burden of his warning anew. "My son, keep thy father's commandment, and forsake not the law of thy mother: bind them continually upon thine heart, and tie them about thy neck. When thou goest, it shall lead thee; when thou sleepest, it shall keep thee;

and when thou awakest, it shall talk with thee. For the commandment is a lamp; and the law is light; and reproofs of instruction are the way of life: to keep thee from the evil woman, from the flattery of the tongue of a strange woman. Lust not after her beauty in thine heart; neither let her take thee with her eyelids. For by means of a whorish woman a man is brought to a piece of bread: and the adulteress will hunt for the precious life. Can a man take fire in his bosom, and his clothes not be burned? Can one go upon hot coals, and his feet not be burned? So he that goeth in to his neighbor's wife; whosoever toucheth her shall not be innocent. Men do not despise a thief, if he steal to satisfy his soul when he is hungry; but if he be found, he shall restore sevenfold; he shall give all the substance of his house. But whose committeth adultery with a woman lacketh understanding: he that doeth it destroyeth his own soul. A wound and dishonor shall he get; and his reproach shall not be wiped away. For jealousy is the rage of a man: therefore he will not spare in the day of vengeance. He will not regard any ransom; neither will he rest content, though thou givest many gifts.

"My son, keep my words, and lay up my commandments with thee. Keep my commandments, and live; and my law as the apple of thine eye. Bind them upon thy fingers, write them upon the table of thine heart. Say unto wisdom, Thou art my sister; and call understanding thy kinswoman: that they may keep thee from the strange woman, from the stranger which flattereth with her words. For at the window of my house I looked through my casement, and beheld among the simple ones, I discerned among the youths, a young man void of understanding, passing through the street near her corner; and he went the way to her house, in the twilight, in the evening, in the black and dark night: and, behold, there met him a woman with the attire of a harlot, and subtile of heart. (She is loud and stubborn; her feet abide not in her house: now is she without, now in the streets, and lieth in wait at every cor-

ner.) So she caught him, and kissed him, and with an impudent face said unto him, I have peace offerings with me; this day have I paid my vows. Therefore came I forth to meet thee, diligently to seek thy face, and I have found thee. I have decked my bed with coverings of tapestry, with carved works, with fine linen of Egypt. I have perfumed my bed with myrrh, aloes, and cinnamon. Come, let us take our fill of love until the morning: let us solace ourselves with loves. For the goodman is not at home, he is gone a long journey: he hath taken a bag of money with him, and will come home at the day appointed.

"With her much fair speech she caused him to yield, with the flattering of her lips she forced him. He goeth after her straightway, as an ox goeth to the slaughter, or as a fool to the correction of the stocks; till a dart strike through his liver; as a bird hasteth to the snare, and knoweth not that it is for his life. Hearken unto me now therefore, O ye children, and attend to the words of my mouth. Let not thine heart decline to her ways, go not astray in her paths. For she hath cast down many wounded: yea, many strong men have been slain by her. Her house is the way to hell, going down to the chambers of death."

Yet once again he speaks. We go on a little farther and find him repeating his warnings. The danger and the folly of it seem to come back to him over and over. "A foolish woman is clamorous: she is simple, and knoweth nothing. For she sitteth at the door of her house, on a seat in the high places of the city, to call passengers who go right on their ways: whoso is simple, let him turn in hither: and as for him that wanteth understanding, she saith to him, Stolen waters are sweet, and bread eaten in secret is pleasant. But he knoweth not that the dead are there; and that her guests are in the depths of hell."

It has been well said that this is, to-day, a good picture of Broadway and the Bowery after nine o'clock at night. The

whole picture, as he sketches it for us here and there, shows in every line the master hand that held the pencil. In the very first lines he puts in bold relief the libertine's loss of all worthy purpose, "Neither take they hold of the paths of life." What could be stronger or truer than these glimpses he gives us;—of the luxurious furnishings, - "I have decked my bed with coverings of tapestry, with carved works, with fine linen of Egypt, and I have perfumed my bed;" of the fugitive life,-"Lest thou shouldest ponder, her ways are moveable; " of the pecuniary loss,—"For by means of a whorish woman a man is brought to a piece of bread;" of the slavery to appetite,—"He shall be holden with the chords of his sin;" of the folly of it,—"As an ox goeth to the slaughter, a fool to the correction of the stocks, a bird hasteth to the snare, whoso is simple let him turn in hither;" of the passions kindled,-"For jealousy is the rage of a man, therefore will he not spare in the day of vengeance; " of the intellectual, moral, and physical death,-"When thy flesh and thy body are consumed; her house inclineth unto death; a wound and dishonor shall he get; many strong men have been slain by her; her house is the way to hell, going down to the chambers of death; but he knoweth not that the dead are there; and that her guests are in the depths of hell."

No cloistered fanatic, far secluded from that murky current of toil, sorrow and sin which marks the every-day life of the world, could have so written. These are words which could only come out of a thorough, practical acquaintance with the facts. Spoken by Inspiration, through an opulent king, the fame of whose wisdom spread to the surrounding nations, generous and kind-hearted, yet giving full rein to his licentiousness in an age which offered him no curb; spoken as the result of extended experiment; spoken, if you please, inductively; spoken two thousand years ago, yet spoken as accurately as though walking the streets of the busy world of to-day,—if this voice have not authority enough, and this testimony weight enough, and this ex-

perience conclusiveness enough to keep us from this evil, then are we beyond instruction. Then will we not hear even the voice of the Apostle of Love when he says;—"But for the fearful, and unbelieving, and abominable, and murderers, and fornicators, and idolators, and all liars, their part shall be in the lake that burneth with fire and brimstone; which is the second death."

II. Some good, substantial people act as if they felt—they really do feel—the crime against society and the family to be a myth, outside of the criminal courts. In the abstract they "suppose there are such things;" in the abstract they have heard of such things as houses of ill-fame; but having been taught, and rightly too, to class this iniquity alongside of other crimes, they come unconsciously to think that its committal must be followed by headlines in the papers and procedures in the courts like those following the crimes of burglary, arson, and murder. Seeing less account of this crime than of the others named, it is easy to believe it no more common than they. It is easy to believe that the temptation to this, is no more direct and active than temptation to the others. And that therefore there is no more need of direct and specific warning. Who would think of warning his son of the wickedness and ruin of murder? A thousand facts of life against which he runs every day, teach him this. Who would think of warning his son of the temptation to kill, telling him that he will surely meet it in its determined and persistent solicitation? The parent knows perfectly well that if his son keeps away from liquor, in all probability he will never be in the least tempted to kill any man. To tell the son otherwise would be to tell him a falsehood. How is it about this crime which is born of lust? Is it prevalent? Is it rampant? Is the young man almost sure to be directly assailed by it? Must be meet it, not on the unreal ground of ethics, but in the practical struggle of busy life upon the street? How is it? Let us see.

Would you like to begin by learning how it is with the metropolis of the country? Dr. F. R. Sturgis recently read a paper before the New York Academy of Medicine, on the "Regulation and Repression of Prostitution." His statements were, that his own observation and that of his professional brethren went to show that syphilis among the well-to-do classes was increasing every day. That with regard to the evil as it existed in New York City, he estimated, from the Parisian statistics, and those given by Sanger, that there were in New York to-day about 11,000 women who were either public prostitutes or clandestine women. That it was estimated that the number of persons in the city treated annually for venereal diseases, in both private and public practice, was about 60,000. "One of the superintendents of police," says Dr. T. De Witt Talmage, "declared that there were enough houses of iniquity in New York to make a line three miles long, and that they would crowd Broadway from the Battery to Houston Street, in solid blocks, on each side; some of them having all the repulsions of Arch Block, and of the sailors' boarding-house, but some having all the glitter of the Fifth Avenue parlor. Upholstery outflaming the setting sun; mirrors winged with cherubim; fountains trickling mid-room into aquariums afloat with bright fins; pictures that rival the Louvre and Luxembourg; carpets embracing the feet with their luxuriance; Chickering grand pouring out upon the night-air snatches of opera to charm passers-by. But the dead are there; and if the enchanter's wand could be only turned backward, or inverted, the upholstery would turn into a shroud, and the bright fountain into waters ropy and scummed, and the chandelier into the fretted roof of a sepulchre, and the song into a dirge, and the gay denizens of the place into the wan faces of the damned." The destruction of how many young men, and older men, think you, is portended by the existence of this social maelstrom? Don't you think that the temptation must be terribly real, direct, and frequent?

But suppose we turn our backs on the great city, and move westward into that wonderful Interior which is the garden of the world. The daily press is not generally esteemed as being oversensitive on questions of morals. We find that the editor of a daily paper in one of the smaller cities of the Mississippi valley, has been visiting a neighboring town—a good representative town of perhaps 25,000 inhabitants. What has he to say of the experiences of this visit, in his own home paper? "Early in the afternoon, sitting in the hall of a leading hotel, I was, by force of circumstances, compelled to be a listener to the conversation of three young men. They certainly did not appear to be at all bashful or backward, nor did they so lower their voices that I had to strain my ears to hear them. They were dressed in the height of fashion, intelligent, good looking, and residents of the city. Their conversation ran on personal adventures with the abandoned women resident in the city, or travellers stopping at the hotels. They seemed to be acquainted with every resort in the city, and all the inmates. It was the vilest, the lowest, the most indecent symposium I ever attended. The blase coolness, the indifferent, matter-of-fact way in which these young men, whose ages were perhaps twenty-three, twenty and nineteen, held converse, was shocking to every manly sensibility. It exceeded in wretchedness the most depraved conversation of the lowest saloon loafers. Whether they were drinkers or no, I do not ask. I only ventured to inquire of a townsman their names; he knew but one—the son of a leading citizen and business man; the young man occupying a position of financial trust-his companions, doubtless, of equal social standing. This city has more evils than its notorious whisky shops. In no other city in the State, I trust, do young men sit in public and exchange tales of the vice-branded women with whom they associate."

Vain trust. How far, in all towns large and small, sin has gotten hold of the young men, it is sorrowful to contemplate. A clergyman, who was formerly a hotel clerk in one of our larger

cities, and who well understands both human nature and how to reach it, tells me that he is constantly surprised at the tales of sin which are told him by those resolved to lead a better life. It is notorious that such institutions as Wellesley College dare not publish the lists of their students lest they be assailed by evil solicitation. A thoroughly upright young man told me, a short time since, that, when living in a quiet county seat village, some acquaintances invited him to take a walk. He sallied out with them, to be unsuspectingly led to a rendezvous at the edge of town, when he was informed he could "have anything he wanted." In his own words, "he got out of there quick;"but don't you think this touches the youth as a practical, aggressive temptation which must be squarely met? Says Dr. Talmage; - "The first time I ever saw the city-it was the city of Philadelphia—I was a mere lad. I stopped at a hotel, and I remember in the even-tide one of these men plied me with his infernal art. He saw I was green. He wanted to show me the sights of the town. He painted the path of sin until it looked like emerald; but I was afraid of him. I shoved back from the basilisk-I made up my mind he was a basilisk. I remember how he wheeled his chair round in front of me, and, with a concentrated and diabolical effort, attempted to destroy my soul; but there were good angels in the air that night."

It is needless to linger longer among the festering sores of this iniquity, to be convinced of their fearful existence. And though the fact so transcends the common belief, we must not make the small-minded mistake of supposing the world to be growing worse. Things have grown wonderfully better since the day when such a man as Socrates could go, with his disciples, to visit a prostitute, for the purpose of consulting with her as to how her occupation might be made most profitable! But when the police can raid a house of shame to find that four out of the five men arrested are members of the state legislature then in session, it would seem that at this present day there is still suffi-

cient cause for alarm, still a wonderful amount of wickedness for the world to cast behind it.

Successful men of affairs in the world are those who grasp most completely the conditions under which human society exists, and are thus able to train their endeavors upon such lines of action as lead to honorable and successful careers. They are the men who estimate accurately the advantage of this, and the damage of that. They are the men who know values and appreciate forces. They are the men who see things as they are. Having learned something of the extent of this iniquity, can we doubt that such men see it, or be uncertain as to how they must regard it? Do we need to waste time making inquiry here? "Life would appear to be a very dangerous sea, judging by the number of wrecks that strew its shoresmore remarkably unsafe, perhaps, for pleasure vachts and such other fancy craft as may fail to maintain the proper relations We walk out into between canvas and ballast. the world on some pleasant day, everything fair and fresh around us, and, with health in our blood and peace in our hearts, we think how good and beautiful a thing life is; yet we rarely walk far without meeting some one to whom all its goodness and beauty are lost. We meet some wretch whose haggard face and feeble limbs and fetid breath betray the victim of debauchery, dying by his last foul disease. The universal fact, based on universal experience, is, that there is nothing in the world that makes so poor a return for its cost as sensual pleasure. No man ever traded extensively in this line without becoming a bankrupt in happiness. It does not pay, and cannot be made to pay, and every man would see and understand this if he would keep an account of his receipts and Credit Sensual Pleasure with the expenditures. illicit indulgence of a powerful passion. Then place the cost up on the debit side of the ledger: shame and fear, conscious loss of purity, the possession of a foul secret that is to be carried into

all society, and into all relationships, disease and remorse, or, what is more than all these, hardness, brutality, and the formation of habits whose only end is ruin. I may not, through fear of giving offense, enter into all the details of the debit side of this account. They may be found and read of all men in grave-yards, in hospitals, in brothels, in garrets, and cellars, in ruined families, and ruined hearts and hopes. Now does this thing pay?

* Sensuality rises into the position of the grand scourge of mankind. It is the mother of disease, the nurse of crime, the burden of taxation, and the destroyer of souls."

That is the way Dr. J. G. Holland saw it. This is the way an honored man in public station for many years in the metropolitan group of cities, sees it;—"If I could lift the curtain and reveal to the young the remorse and the shame and the slavery that are sure to come, it seems to me that they would cut off their right hand sooner than venture into the first violation of chastity. To put back into that fair haven of purity is no holiday business after you have let the gales of passion loose."

It is the business of newspaper correspondents to see. This is the way that giant among them, "Gath," sees this monstrous vice. "Sensuality is hardly less the foe of man than alcohol. There may be extreme cases where alcohol is a relief to o'erdriven wits, compelling cessation, but the other fiend poisons the sources of moral distinctions, turns domestic trust into anarchy, makes murder no more than a scandal, and toward old age takes all the faith from life. Looking back the self-deluded man sees gulfs he cannot close, confidence he industriously disturbed, conjugality he has undermined, and heaven he has pulled down. For what but to take his soul and give it unto swine that turned again and rent him!" Even such a paper as the Chicago Times had some very feeling words to say about young men who paid with their hearts' blood for the

indulgence of these nameless vices, when furnished with a text by the murder, at the hands of his mistress, of a clerk of the Board of Trade. Surely we do not need to push our questionings further.

IV. Would you know just what the physical penalties are? Should you enter the gates of Sodom, traverse her blistering streets, and pass into her putrefying lazarettos, you would find the most frequent and least dreaded disease to be what is known as gonorrhœa, or clap. One attack does not promise immunity from further trouble. It is no protection against another attack. And he who leads a life of flagrant sin is made the victim of this disease over and over again. It is, essentially, a violent inflammation of the mucous lining of the urethra, caused by the specific venereal poison, and accompanied by a purulent discharge from the inflamed surfaces. In from two to eight days after exposure to the virus, a slight itching and tingling about the forward part of the urethra is noticed, together with a reddening of its orifice. In a day or two, as the inflammation grows, proceeding from before backwards, the orifice presents a more angry appearance, is swollen, seems partly closed, becomes ragged in outline, and a watery or yellowish discharge oozes out from between its lips. Still the disturbance increases, until the glans becomes dark red, swollen, and tender; the prepuce edematous and enlarged, producing phimosis or paraphimosis; the discharge profuse, and of a greenish-yellow caste; the desire to empty the bladder frequent; the pain in so doing severe, and at times intolerable; the stream itself small, twisted, and forked; and oftentimes the whole penis becomes swollen, the whole organ being involved in a general inflammation-in rare instances going so far as to end in gangrene. Besides all this, the tumult almost always extends beyond the urethra and into the corpus spongiosum, producing frequent excitements of the whole apparatus, which, in its inflamed state, are exquisitely painful. This state of things has been termed chordee.

is also aching in the testes, groins and back, with more or less general fever.

The disease runs its course in from one to three weeks, some cases being easily managed, while others are notably severe. After the inflammation has once reached its highest point, the decline is rapid; but very commonly there remains, after all other symptoms of the trouble have disappeared, a slight discharge, perhaps only a drop or two daily, just enough to glue together the lips of the urethral orifice—a condition known as gleet. This is often very persistent, severely trying the patience of both the physician and his charge. Examination, however, will many times show it to be dependent upon irritation created by a stricture of the urethral canal; this latter condition being consequent upon the violent inflammation which has burned over the delicate mucous surfaces. In such cases, the surgeon has ready means at hand for doing away with the ring of contracted tissue, and the gleet disappears with the removal of its cause.

When an attack of gonorrhea makes its appearance, it is much the better plan for the patient to remain quietly in his room, keeping faithfully to the recumbent position upon lounge or bed. But if, for some special reason, this be out of the question, a suspensory bandage should be worn so that the invaded tissues may have as large a measure of rest as may be. Frequent and prolonged bathing of the affected parts in hot water—as hot as can be borne—gives much relief, tends to lessen the severity of the attack as a whole, and diminishes the liability to chordee. When, however, this latter condition supervenes in spite of all mollifying measures, the great pain it causes demands prompt relief. This is best accomplished by the application, for a few moments, of a considerable degree of cold, through the medium of cold water, or some cold metallic body. Dr. Geo. W. Winterburn has also found Lupulin of service.

In the first stage of gonorrhoa the best remedy is Aconite.

It should be given in drop doses of the first decimal preparation, and repeated every hour or two. When the second stage is reached, i. e., when the smarting and burning begin, Cannabis Sativa should take the place of the Aconite. But to get the desired result from this remedy, it should be given in the thirtieth potency. Ignorance of the preparation in which its notable power over this inflammation lies, has resulted in disappointment in some quarters, with denial of its effectiveness. But properly used, it has no superior, and no peer even. Sandal-wood has often proved a valuable remedy in obstinate cases, given in doses of ten drops three times a day. Unfortunately it cannot be taken long without producing gastric disturbance, as shown by nausea, loss of appetite, etc. Still, it is a more reliable drug than either Copaiba or Cubeba, which were formerly such favorites. Among the drugs more commonly used, may also be mentioned, Gelsemium, Cantharis, Hydrastis, Hepar Sulphuris, Petroselinum, Thuya, and Sepia.

Another method of handling the disease is the repression, or attempted repression, of the inflammation by means of astringent and caustic solutions injected into the urethra. method has been, and is, employed by very many physicians. Yet there are not wanting those who insist that the topical application of such drugs as Nitrate of Silver, Sulphate of Zinc, Acetate of Lead, etc., is not chiefly a means of cure, but a method of suppression which tends to drive the inflammation to the prostate gland, the bladder, or the testes, and is therefor to be discountenanced. This objection is well taken and valid, and it is to be hoped that these old time injections will soon take their place with the things of the past. But there are two local applications which are powerful for good, and at the same time free from possibilities of evil. The first was suggested by Dr. Price, of Baltimore, and consists in the injection, upon the first appearance of the discharge, of a few drops of pure Glycerine (the bladder having been first emptied), the same being retained

about five minutes, and then allowed to escape. The second is applicable to all stages of the disease, and consists in the copious irrigation of the urethra, from behind forward, with hot water. It is a most safe and helpful measure, so moderating the painful features of the malady that they are reduced to the rank of mere annoyances, and materially shortening the duration of the attack. I believe Dr. H. H. Curtis was the first to publish tabulated results with this mode of treatment. He has used as much as ten quarts of hot water at a single sitting, with none but the happiest results.

It must not be forgotten that severe complications are at times attendant upon an attack of gonorrhœa. The most common of all is known as gonorrhœal ophthalmia. It is the most dangerous of all known inflammations of the eye, and is due to the transplanting—accidentally, by means of the finger—of the highly contagious discharge from the urethra, to the conjunctiva. It rages with great violence, progressing from the mucous membrane lining the lids and covering the ball, to the cornea and the orbit, often destroying the sight with such rapidity that the eye is ruined before it is shown to the physician. Other com plications are rheumatism, and inflammations of the neck of the bladder, of the prostate gland, of the epididymis, and of the lymphatic glands of the groin (bubo). Stricture rarely follows a gonorrhœa which has not been mistreated with strongly irritant injections.

It should also be remembered that in rare instances the taking of a cold, over-exercise of the sexual apparatus—in short, any source of irritation, may bring on an attack of simple inflammation of the urethra, independent of the presence of the gonorrhœal virus. Nor is this simple inflammation readily distinguishable from the specific form; and this possibility should be borne in mind, for ignorance of this fact has sometimes been the cause of much mental distress needlessly suffered.

Standing second in the list of the venereal diseases is chan croid. It is nothing more than a contagious sore or ulcer, which appears almost invariably about the glans or prepuce—in the great majority of cases just behind the corona glandis in that depression which marks the junction of the mucous membrane lining the prepuce with that covering the glans. This sore is of a strictly local character and does not in any way infect the system; is soft, with a tendency to spread which sometimes results in considerable loss of tissue; and is occasionally accompanied by swelling of the lymphatics of the groin—a condition known as bubo. This is all there is of it. The pain, the annoyance, the liability to any resultant damage, are all insignificant.

But it gathers importance from its resemblance to the first signal which that almost limitless disaster, syphilis, gives of its impending career of ruin. Literally, the word chancroid means, like chancre. And chancre is the name given to the local ulcer, closely resembling the ulcer of chancroid, which is the earliest and most trivial symptom of syphilis. Chancroid is no more than it appears to be; chancre is a prophecy of evil which clouds all the future. To determine to which variety a given sore belongs, requires all the technical knowledge and practical experience of the physician. The more prominent peculiarities by which chancroid is known, are its speedy appearance, this being within from one to three days after exposure; the absence of induration or hardening of the contiguous tissue, from which it is familiarly known as "soft chancre;" the tendency of the ulceration to extend itself into the surrounding tissue; and the abundant and acrid discharge from its surface.

The treatment of chancroid is quite simple. The real thing to be accomplished is the destruction of the specific poison of the ulcer, and its conversion into an innocent sore subject to the ordinary processes of healing. Surgeon Helmuth aptly says;—
"We have not an ordinary ulcer; we have locally poisonous pus

to encounter;" and he follows the method of Ricord, making application of Sulphuric Acid mixed with sufficient powdered charcoal to form a half-solid paste. The more ordinary method is to dip the end of a glass rod in fuming nitric acid and apply to the ulcerated surface. In either case the application is continued for but a few moments, and due care must be taken to avoid needless destruction of tissue. Subsequent care involves merely cleanliness and the use of any mild, unirritating dressing. For any accompanying bubo, the Protoiodide of Mercury, in the second or third decimal trituration, is undoubtedly the best remedy, and has over and over again proved its reliability and efficiency. Under its use, suppuration rarely takes place; if this, however, occurs, the swelling must be opened and the pus allowed to escape. But we must leave this simple venereal ulcer, and hasten on to that dread malady which is, pre-eminently, the penalty of an impure life; the physical death which lust, when it has conceived, bringeth forth.

Possessed of a hideous prominence among the venereal diseases, of an inveteracy which clings to the system for decades, of a malignity which spares no organ and no tissue, syphilis stands the great scourge of Sodom, overshadowing all othersa leprosy before which all her other sores seem almost inoffensive. It is doubtless true that quite as many who live within her rotten walls die from the effects of gonorrhea as from those of syphilis. For inflammatory conditions, long continued, travel backward to the kidneys and set up disorganizations which result in death. While much of the danger to life which formerly lay couched in syphilis, has succumbed to modern medicine. But an attack of gonorrhœa soon runs its course, and the system is freed from its poison; as is conclusively shown by the ready susceptibility to another onset of the disease. Not so with syphilis. Once contracted, it is doubtful if it ever leaves the system; certain it is that a second attack is a thing of the utmost rarity. Pursuing its victim through long years with successive organic affections in wonderful variety, the exact danger, damage, and disfigure ment of which cannot be predicted, it possesses terrors before which those of gonorrhœa sink into comparative insignificance. The only fear which chancroid carries with it, is that it may be syphilis; so that syphilis is left the one characteristic constitutional rottenness with which Sodom permanently brands her denizens.

Just when this most frightful of poisons made its appearance in the world, has been the subject of much and animated discussion. There can be no question that there was a special and violent outbreak of the disease about four hundred years ago. At the close of the fifteenth century, the king of France set out for Italy with a large army, to take possession of Naples. the clash of armies which followed, and with the debauchery which flourishes in the wake of large bodies of soldiery, and simultaneously with the disbanding of the troops, there was a terrible outburst of syphilis. Willing to take the odium from off their own shoulders and place it upon those of their enemies, the Italians called it the "French disease," while the French named it the "mal de Naples." So notable were the ravages of the disease at this period, that it has been quite generally supposed that its very existence dated from this epoch in its history. Granting this to be the fact, it would still be a mistake to put the entire responsibility for its birth upon the shoulders of the Neapolitan armies. For before the French had left the soil of Italy, it had obtained such foothold in Germany as to attract public notice. Indeed, the origin of this celebrated outbreak of venereal disease has been ascribed to an altogether different source. Surgeon Helmuth, speaking of the scholarly researches of Jourdan in the matter of the history of syphilis, says;-"He is also of opinion that the terrible epidemic which prevailed about the close of the fifteenth century, originated with the Marranes (hogs). This term was applied to those Moors and Jews who had entirely disregarded the teachings of Christianity, and refused to enlist under its banner; for this offense they were expelled from Spain by an edict of King Ferdinand, dated March, 1492. The persecutions were unremitting, and the tortures to which this unfortunate class were subjected were horrible in the extreme, to avoid which they concealed their belief, but secretly practiced those rules that were prescribed by their religion. They are described as living in the most disgusting and loathsome manner, and leprosy among them was alleged to be common. They were driven from their homes, not allowed to carry with them any of their property, and very many of them retired to the northern coasts of Africa, where they propagated a disease so terribly contagious, that of 170,000 families who crossed to Africa, 30,000 were destroyed. Jourdan says: 'When we compare the testimonies of the most veridical historians and physicians, we think it impossible to doubt its being derived from the Marranes, who were expelled from Spain before the discovery of America."

Turning from the hypothesis which refers the origin of syphilis to the close of the fifteenth century, we come upon the theory, which has been quite a popular one, that its original home was with the aborigines of this country, from whence it was carried to Europe by the sailors who were with Columbus, upon their return with him from his first voyage of discovery to the western world. That it existed in the early Spanish settlements is true. In his life of Columbus, Irving says;-"Many of the Spaniards suffered also under the torments of a disease hitherto unknown among them, the scourge, as was supposed, of their licentious intercourse with the Indian females; but the origin of which, whether American or European, has been a subject of great dispute." It is reasonable to suppose that the disease seemed to them a "hitherto unknown" one, because appearing with an unaccustomed virulence. For it has long been known that syphilis is most violent in its manifestations when it crosses the race line. At any rate,

the theory of the infection of Europe through disease carried there on board the ships of Columbus, is clearly untenable.

Not, however, because syphilis did not exist among the aboriginal peoples of this continent. It is highly probable that the disease is as old as the iniquity of which it is the fruit. Professor Joseph Jones has called attention to the fact that the skeletons found in the prehistoric graves scattered over the southern part of this country, show in their very bones unmistakable marks of its ravages. "So far from these evidences of the action of syphilis being mere 'traces of periostitis, and constituting mere roughness or hyperostoses along the tibial shafts,' the bones are in many instances thoroughly diseased, enlarged, and thickened, with the medullary cavity completely obliterated by the effects of inflammatory action, and with the surfaces eroded in many places. These erosions resemble in all respects those caused by syphilis and attended by ulceration of the skin and soft parts during life. Furthermore, the disease was not confined to the 'tibial shafts;' bones of the cranium, the fibula, the ulna, the radius, the clavicle, the sternum, and the bones of the face exhibited unmistakable traces of periostitis, ostitis, caries, sclerosis, and exostosis.

"That these diseases were not due to mechanical injury or to exposure to cold, is evident from the fact that they were almost universally symmetrical. Thus, when one tibia was diseased, the other was similarly affected, both as to the position and nature of the disease. In like manner both fibulæ presented similar evidences of periostitis, ostitis, and exostosis; this was true also of the bones of the forearm (radius and ulna) and of the clavicle."

Skulls bearing the same marks of reproach have been found in Egyptian mummies, in the lake dwellings of Europe, and among the antiquities of Peru. Captain Dabry, a French consul in China, asserted that "Chinese medical literature affords

^{*}The Venereal Diseases. Bumstead and Taylor.

evidence of the existence of syphilis in that country and of its treatment by Mercury, many centuries before the birth of Christ." A current medical journal gives the following account of the existence of the disease at an early day in Japan, gleaning the same from the British Medical Journal, and Virchows Archiv. It seems that between the years A. D. 806 and 810, an emperor of Japan commanded his court physicians, Abemanus and Idzumo Kirosada, to collect in one volume all extant records of native medicine and surgery. A manuscript copy of this work, for centuries forgotten, although the facts of its origin were recorded in Japanese history, was found in 1827, by a priest, in a provincial Buddhist temple. Dr. Scheube, of Leipzig, has recently examined this work, and, in a published article has shown its undoubted authenticity and its high value from a scientific point of view. It was written long before Chinese ideas had penetrated into Japan and influenced native practitioners. The most interesting passages are descriptions of local and general affections, which clearly prove that syphilis, and several allied disorders, were well known to the ancient Japanese. Chancroid and phagedenic chancre are clearly described, as well as a "swelling on the penis, the size of a millet seed," followed by eruptions, feverishness, pains in the bones and head, blindness, swelling of the testicles, and other very familiar symptoms. These were observed to continue for many years.

Of the three hypotheses as to the beginnings of this scourge—that it gained its foothold in Europe as an importation from America; that it had its birth on European soil about the close of the fifteenth century; that it has existed from remote antiquity—it hardly admits of a doubt that the latter will become the generally accepted opinion. As Gross* well puts it;—"I may remark that, in my opinion, it is great folly to regard the disease as of modern origin. If the records of

^{*}A System of Surgery.

antiquity could be fully explored, it cannot be doubted that we should discover the most satisfactory and irrefragable evidence of the existence of syphilis in the most remote periods of society, now aggravated and now kept in abeyance, according to the habits and morals of the various races of mankind, and the nature of the climate of the countries in which they dwelt."

Leaving the history of this disorder, and turning our attention to the disease itself, we find it to be a certain invisible, impalpable poison, which first manifests its presence by the appearance of the characteristic sore at the spot where it entered the organism. But that sore is not the disease, it is but the first signal of its attack. The poison itself, the disease itself, that destructive force which spends its direful energies upon the system for long continued years, is a thing so subtle that no chemist has yet detected it, no microscope has yet found it. To understand at all the syphilitic disorder as it passes from stage to stage and from tissue to tissue, one must have a clear conception of the undiscovered but active poison which pervades the entire system, of which all those changes we meet in function and in organ, are but the manifestation and result.

The primary sore is insignificant, save as a sure prophecy of evil in the future. It has received the name of chancre, and appears in about three weeks after the poison has entered the system. It may show itself a little earlier or considerably later, but the average interval is from twenty-one to twenty-four days. How useless is the attempt to destroy the poison by cauterizing the sore, is apparent upon the mere statement of this long period of incubation. The chief characteristic of a chancre is its indurated base, dependent upon an infiltration of the subjacent tissues. It may feel under the finger like a split pea, or present a hardness several times greater in extent. While in other cases it is so slight as to have been compared to parchment, requiring a skilful touch for its detection. The chancre may disappear in two or three weeks, its duration being gener-

ally somewhat longer, at times persisting for months. Its treatment is simple. It involves scrupulous cleanliness, and the application of a lint dressing moistened with Calendula, or sprinkled with Iodoform.

Syphilitic bubo, an indolent enlargement of the lymphatic glands situated in the groin, is noticed about two weeks after the appearance of the chancre. These swellings are hard, indurated, do not suppurate, soon reach their maximum size, and then remain stationary for long periods of time. They require no treatment beyond that instituted for the general syphilitic taint.

These two conditions noted as being the first to supervene upon the reception of the poison, chancre and bubo, constitute the first stage of the disease, technically known as primary syphilis. It will be noticed that they are not general, but local derangements. They are but the little cloud, no larger than a man's hand, which presages the coming tempest. And as there is often a lull before the storm bursts, so there are generally intervals of greater or less length—sometimes of years—between the three stages of this malady, which are known as primary, secondary and tertiary syphilis.

Six or seven weeks after the appearance of the chancre, provided remedial treatment has not materially affected the course of the disorder, the manifestations of secondary syphilis begin to show themselves. They consist principally of a great variety of affections of the skin and mucous membranes; including also some lesser affections of the eye, of the nervous system, and of various glands. Just before the eruption begins to disfigure the skin, symptoms of fever set in, well marked in some cases, less so in others. But slight or severe, the accompanying pains are sure to develop with all their characteristic "bone-breaking" qualities. They may be felt only at night, are sure to be worse at that time even if they continue through the day, and may occur in almost all parts of the body, though that

seated between the knee and ankle is popularly supposed to be most suggestive of the specific poison. The cutaneous eruption may assume the form of almost any class of skin diseases, i. e., it may be vesicular, pustular, papular, tubercular, etc. Their most distinctive features are their color, -that of copper, or raw ham-and the absence of itching. The hair loses its tone, becomes harsh and dry, and suffers marked thinning, not only upon the scalp, the beard and eyebrows sharing in the spoliation. With the mucous membranes, the unwelcome presence is mainly shown through the medium of ulcers, and their near relatives, the peculiar, moist, furred, "mucous patches." Although frequently found elsewhere, these lesions appear, by preference, in and about the cavities of the mouth and nose.

It is not practicable to draw an exact line between secondary and tertiary syphilis. For instance, inflammation of the iris is an intermediate affection occurring between these two stages; while the periosteum and bones suffer in both. However, tertiary syphilis may set in at any time after two years have elapsed from the appearance of the chancre, and is marked by its wonderfully destructive tendencies, and its attacks upon the deeper tissues, such as bone, tendon, cartilage, the viscera, connective tissue, etc. "Its presiding genius is destruction, the tendency of its lesions is to softening and ulceration, and the medium through which these changes are effected is a substance known as gummy material, either diffused through the tissues, or collected into circumscribed tumors. This gummy material is a specific neoplasm analogous to tubercle, cancer, lupous deposit, etc. It is an hyperplasia of cells, which have not generally the vitality to become organized. They grow at the expense of the tissue in which they are formed, and, after reaching a certain stage of development, undergo a retrograde meta morphosis, and either become absorbed gradually, without solution of continuity of the tissue in which they are deposited, or break down in mass, occasioning abcess or ulceration—in either case leaving indelible cicatrices behind. Certain of the new formations due to tertiary syphilis become organized, leading to permanent thickening, sub-periosteal exostoses, pachymeningitis, chronic laryngeal thickenings, etc."*

Time and space would fail us were the attempt made to follow out in detail the multiform disaster which this hydra-headed monster inflicts upon the body. Kings have died in consequence of it. No out-of-the-way corner of the organism is secluded enough to escape its ravages. No tissue and no function is secure from its menace. The muscles suffer destruction; the bones decay, or are deformed by excrescences; the skin is made repulsive by a numerous group of disorders; the mucous membranes are perforated with ulcerations; the tongue is eaten away by the same process; the tissues of the larynx are broken down; the exquisite mechanism of the eye is attacked in its various parts by destructive inflammations; the inner chamber of the ear is assailed, while the cartilage which gives form to the outer ear is consumed by the common corrosion; tumors and chronic inflammations beset the lungs; the nervous system suffers in its very substance; the abdominal viscera are visited in their turn; while deep ulcers hold high carnival anywhere and everywhere, and the very nails rot off.

Hellish picture as it is, it is fact and not fancy. Take the nervous system. I know of no man who has a better right to speak here, than Dr. H. C. Wood, Professor of nervous diseases in one of the most famous medical schools in this country. What does he say? "It is now necessary to approach a subject whose importance forbids silence, but whose nature is such as almost to forbid utterance in a popular work like the present. Yet how is the lesson to be learned, if no one teaches it? It is scarcely necessary or right here to say much about the dangers of a sexually impure life. Only this should be remembered,

^{*}Genito-Urinary Diseases. Van Buren and Keyes.

that across the life of the man who yields once to temptation, lies the shadow of a possible fate to himself, and, if he marries, to those most dear to him, amongst the most horrible on earth; that no precaution, that no supposed character on the part of his partner in guilt, is any guarantee of escape from a disease which, once induced, is ineradicable from the system. Also, that apparent escape from evil consequences is by no means always a real escape.

"A large proportion of severe brain affections are the result of contracted disease; and it has been my fate to see many persons who were astounded when told the true nature of their disorder—they having never suspected that they had suffered, although they freely confessed to having, in their youth, exposed themselves to the contagion. They thought they had escaped, but the early sowing yielded in after years its harvest of suffering and death."*

Let me show you the picture as physicians draw it for the eye of physicians. This is the picture of one phase of the disease, as drawn by Drs. Van Buren and Keyes in their classical work: "It may develop as a gummy nodule or as diffuse infiltration of the sub-mucous tissue, or be primarily sub-periosteal on the wall of the pharynx, or in the nasal cavity, or on the hard palate. It develops first as one or more deep, round, hard, insensitive swellings, possibly a diffuse infiltration. The mucous membrane may be unchanged in color at first or slightly yellowish, if the tumors are superficial. As the latter grow, the membrane over them darkens in color, becomes edematous, then softens and rapidly gives way, leaving a deep, irregular yellow ulcer, with distinct loss of substance, surrounded by a line of inflammatory redness. Such ulcers often spread with alarming rapidity, perforating the soft palate or cutting off the uvula within a few days, even hours. The explosion may take place as if by electricity, and twenty-four hours deprive a patient

^{*}Brain-work and Overwork.

of his soft palate. Deglutition is sometimes painful, sometimes painless, according to whether or not the ulcer is put upon the stretch in swallowing. Any subjacent bone becomes rapidly eroded and necrosed, so that the progress of the ulcer may destroy all the soft and portions of the hard palate, more or less of the turbinated and ethmoid bones, with the vomer and portions of the posterior bony wall of the pharynx, leaving a vast ulcerated cavity to represent what was the fauces and pharynx. The disease may extend inward occasionally and affect the membranes at the base of the brain, giving rise to epilepsy or other nervous phenomena. The voice becomes nasal, and food and drink pass forward and out of the nose in swallowing."

Here is an allied sketch from Helmuth's System of Surgery: "In the more advanced stages the ulcer is excavated, or, as Mr. Hunter has expressed it, 'dug out;' if the ulceration still advance, one or both tonsils, the velum palati, membranous portion of the Eustachian tube, and even the epiglottis may be entirely destroyed, giving rise to permanent deafness, incessant cough, and endangering the patient's life from suffocation, by permitting food and drink to enter the larynx. In many instances, a communication is established between the nose and mouth, from the ulceration having destroyed the soft parts and bones of the palate. At other times the disease travels along the Schneiderian membrane, undermines the septum and cartilaginous portion of the nose, destroys the periosteum covering the thin and delicate bones, which are soon rendered completely carious, and crumble away, destroying the nose, and thereby causing pitiable disfiguration, and reducing the patient to a condition often loathsome, with foul and fetid matter flowing perpetually from the nostrils or into the throat, and a breath so extremely offensive as to render the sufferer hateful to himself and disgusting to others, - Ozana syphilitica."

These being the pictures which authorities draw for the instruction of their brother physicians, certainly these pages must

be judged innocent of any exaggeration. Where the fact is so terrific, there is small temptation to go beyond the fact. leprosy of Sodom is frightful enough in its reality to beggar "There is no organ or tissue of the body," say Drs. Van Buren and Keyes, "through which it may not manifest its presence by symptoms, or upon which it may not exercise its power. The lymphatic glands all over the body may suffer, some habitually more than others. The skin from crown to sole, the nails, the hair (the teeth in inherited disease), and the mucous membranes, especially around the natural orifices, have their peculiar affections, due to syphilis. The eye and the testicle do not escape, and each and every viscus is liable to be invaded, as are all the tissues, connective, fibrous, muscular, cartilage, bone, brain, nerve, and vessel. Not only this, but the all-embracing arms of general syphilis include the functions as well, any of which may be disordered by it and each and all of the special senses may be perverted or destroyed-including The symptoms of all the forms of local, the sexual appetite. special, or general paralysis of motion or sensation, may be occasioned by syphilis. Finally, the intellect may succumb. Acute and chronic mania, dementia, lunacy, idiocy, all the above, and many more, form a category of symptoms comprehended under the one term general syphilis."

Is syphilis ever cured? Is it ever expelled from the body, so that the system is thoroughly freed from its influence? Does the time ever come when one who has contracted this disease may marry with the assurance that he will not be compelled to read the story of his sin in the puny faces of his unfortunate children? These are hard questions. One shrinks from so answering that hope shall not find one little corner in which to stay. Yet the malady is so inveterate that no one can say when it is at an end. No one can affirm, positively, that it is never cured; no one can say certainly that it ever does more than relax its hold on its victim. Books have been written on these ques-

tions, and they are still open. Physicians of eminence do not hesitate to say, No, it is never cured. Other physicians of equal worth incline to the opposite opinion. The strong hereditary taint which syphilis carries into the succeeding generation may well make us cautious. The poison may be communicated to the unborn child long after the danger of inflicting it upon that child's mother, is past. Its effects are manifested in various The life of the child is often destroyed before its birth. At other times the child is born with external eruptions, and affections of sundry internal organs. Its favorite method is to leave the child apparently untouched until after birth; when, for some apparently unaccountable reason, it fails to grow, its skin "breaks out," and the nose fills up with mucous. The child's face has a strangely aged look, the skin being withered, sallow and wrinkled; while, later, the teeth present a notched, stunted, irregular, half-developed appearance. Oftentimes the characteristic ulcerative processes develop themselves, the various junctions between the skin and mucous membranes being favorite localities.

Sometimes the curse of inherited syphilis remains in hiding until childhood passes into youth, or youth verges upon manhood. "Cases are not very infrequently encountered where a growing or full-grown child first presents evidences of syphilis, the disease being unmistakably inherited, perhaps the father known to be syphilitic, yet neither the child nor the mother can be brought to confess directly or indirectly any antecedent syphilitic disease. That there may have been some undiscovered symptom in babyhood must be allowed, but still it is as near a certainty as possible, without absolute proof, that a child of a parent whose syphilis has nearly run out, may show no signs of disease until many years after birth, and then the lesion will be of a bone, a joint, a gland, the eye, or perhaps there will be a patch on the mucous membrane of the buccal cavity, an ulcer of the nose resembling lupus, or some

other single localized lesion, usually passing undiagnosticated as far as its etiology is concerned. These symptoms were often designated by the older surgeons by the somewhat vague term of 'strumous,' as evincing characteristics which were not absolutely identical with those of scrofula. The popularity of Astley Cooper's well-known tonic for struma, in early childhood (corrosive sublimate in Huxham's tincture of bark), is probably explained in this manner.'

In any event, it matters little whether the presence of inherited syphilis be determined earlier or later, for that fine integrity of constitution which carries a man in safety through strains and crises to a useful and successful life, is lost in either case; to be supplanted by that puny and unreliable habit of body which is ever ready to fall in pieces upon the slightest provocation. Taking into account, then, both the direct damage to the individual, and the shattered constitution entailed upon the child, the possible and probable length of time for which the system may suffer from the baleful influence of this grim tenant becomes a momentous question. It is a question upon which there is wide disagreement even among experts. This very disagreement is conclusive evidence that the poison may reside within the organism for extended periods, even though it be not constantly at work in campaigns of active destruction.

Perhaps we cannot arrive more nearly at the truth of the matter than by listening to the opinions of those who can speak with most authority. Drs. Van Buren and Keyes say, on this point;—"There is no disease so protean in its form as syphilis.

'Age cannot wither her, nor custom stale her infinite variety.'

Syphilis finds expression through every tissue. Its symptoms simulate those of a vast number of other diseases, and some of its forms may be so obscure as to baffle accurate diagnosis without the assistance of the touchstone treatment. So true is this, that it has passed into a proverb among certain of the less

well-informed of the profession, in face of an obscure disease, 'If you do not know what to do, treat the patent for syphilis.' The unscientific looseness of such a course needs no comment; but the existence of the proverb is the best argument to substantiate the protean type of syphilis. Only minute and careful investigation into the more obscure manifestations of the disease can lead to accuracy of diagnosis, which is of more importance in this than perhaps in any other malady. Hence the difficulty of saying when syphilis has ended, or indeed of deciding that it ever does end, since it so often permanently modifies the diathesis of the individual who has suffered from it. Syphilis may occur in so mild a form that the patient may never know he has it; or, again, with such intensity that extensive lesions of the skin, bone, and other tissues, may come on within the first year, with paralytic symptoms of great extent and severity. Syphilis may manifest itself as a mild eruption after chancre, disappearing possibly without treatment, and then (exceptionally, it is true) lie latent for many years, as long as fifty-two years, to reappear with characters due only to syphilitic disease. Fournier's case, a gentleman of seventeen had acquired chancre, followed by some secondary eruptions, which were pronounced syphilitic. No further symptoms had appeared until the age of sixty-nine-fifty-two years after the chancre-when he had suffered from syphilitic caries of the upper jaw. At seventy-two he applied to Fournier for a gummy tumor of the thigh, which got rapidly well under the Iodide of Potassium. Now, in this case, had the patient died at the age of sixty-eight, he might, with seeming justice, have been reported as an instance of cure, for over half a century would have intervened since his last syphilitic symptom.

"This one case gives at a glance the practical answer to the whole question of the duration of syphilis. Every physician of any considerable experience with syphilis can recall analogous cases, though, perhaps, less striking. Syphilis, once acquired,

stamps its impress upon the individuality of the patient, and becomes a part of him, and no power on earth in a given case can say when that impress disappears. A half-century may pass away and the trail of the serpent be still visible. This is a fact, and as such must be recognized. It is of vast practical importance, and to shut our eyes to it would be folly. That we do not so shut our eyes, even those of us who believe in an early and radical cure of syphilis, is sufficiently shown by the avidity with which, in doubtful cases of skin or bone disease, the history of the patient is carefully inquired into for a record of pre-existing syphilis, which, if found, no matter how distant, makes the diagnosis, establishes the treatment, and often leads to a cure. *

"Practically what the physician wants to know is this: during what time are symptoms liable to recur before that long latent period may be expected, which is to terminate all manifestations of disease, and in which the patient is certainly well, probably cured? Or, still more practically, the question may be put: If a patient presents himself with syphilitic chancre, at what period may he safely marry?

"Roughly, and on the average, this last question may be answered by saying, after about two and a half years, or to be safe regarding marriage, one year after the disappearance of the last syphilitic symptom, treatment having been continuously kept up, and being continued until after the birth of the first child. This may be said, because well-managed syphilis usually ceases to relapse in about that time. Those patients most often do badly, other things being equal, who follow irregular and uneven courses of treatment, now pushing medication to excess, in the hope of killing the disease, which is impossible, now giving up all treatment in despair. It is very rare for bad symptoms to appear upon a patient who falls into the hands of a conscientious physician, one who recognizes that the disease cannot be jugulated, that the eliminative and not the abortive treatment must be followed, and who quietly and steadily pursues the

enemy through its periods of repose, as well as during its moments of eruption, confident that, by mildly and persistently keeping up this treatment by extinction, he will triumph at last over the disease. In mild cases so treated there may be but one faint eruption, or perhaps but a few little spots, with epitrochlear, glandular induration and a few mucous patches, to mark the disease, the whole of the symptoms only lasting a few months after chancre, and the patient's after-life being healthful. This, however, is the exception. Ordinarily some mild symptoms continue to crop out from time to time, for perhaps on an average two to three years, after which comes the period, be it cure or not, during which the patient bears all the marks of health, is unable to communicate the disease, and reproduces healthy offspring.

"Finally, there are exceptional examples where late tertiary symptoms appear after long years of latency, as already observed; of malignant syphilis which is controlled with difficulty by treatment; and, of other inveterate specimens of disease where relapse after relapse follows through long series of years, perhaps in spite of a continuous intelligent treatment."

Dr. B. W. Richardson, in his well-known work, Diseases of Modern Life, says;—"One disease stands apart for notice. The communicable malady called 'specific,' or syphilis, the moral as well as the physical blot on our civilized life, I must mention forcibly, however unpleasant and brief the utterance. The poison of this malady once engrafted into the living body, and producing its effects there, leaves, according to my experience, organic evils which are never in the whole of a lifetime completely removed. Of the many examples of this form of disease which in thirty years of medical life I have seen, I can recall not one in which some permanent evils have not been inflicted. In many instances the evils have passed in hereditary line; in all they have remained in the organism first affected, tinging to the end of its life, every other disorder, and produ-

cing themselves some disorders which surreptitiously assume independent characters, and are looked upon too often as distinct and independent constitutional or local affections. ous forms of disease of the skin; the disease known as lupus; some forms of consumption; some phases of struma or scrofula; many forms of cachectic feebleness and impaired physical build, -what are denominated delicate states of constitution, these and other types of disease are so directly and indirectly connected with the specific taint, it becomes impossible to be too careful in tracing it out, or in measuring the degree to which it extends in the field of morbid phenomena. In a word, this communicable disease, though the most controllable, is probably, taking it all in all, the most prolific of injury to human kind. In the happier days to come, when, under moral influences, this malady shall cease, the nosologies of the learned will have to be revised, that they may be curtailed of loathsome phenomena now too truly registered, but then, except by the past, unknown."

The treatment of syphilis is well defined, and requires the use of but few drugs. A great number have been, first and last, extravagantly praised for their supposed virtues; but one by one they have failed to stand the test of experience. The two remedies which do almost all the work which is ever done toward curing this disease, are Mercury and Iodine. The latter is almost exclusively used in the form of the Iodide of Potassium; though the Iodides of Sodium and Ammonium are also used, and, in rare instances, the Iodine itself independently of any combination. Mercury, too, is used in various preparations, the Protoiodide being that form possessing the largest usefulness. But whether used in this form or that, both drugs are thoroughly reliable and absolutely indispensable. Prejudice has arisen in some quarters against the use of Mercury; but the prejudice grew out of the production of that unfortunate condition whose chief symptom is salivation, and such use of Mercury is

not use, but abuse. Intelligently given, no harm of any sort results from its persistent use; and the experience of every successful physician is the same as that of Professor Newman, of Vienna. After systematic experiment with a series of cases treated according to the two methods, the mercurial and the non-mercurial, he gives it as his opinion that the treatment without Mercury may be well enough in theory, but is unsuccessful in practice. It is stated that the laborers in the quick-silver mines never suffer from venereal disease, though not, by any means, always living exemplary lives.

Mercury is the remedy for the primary and secondary stages. It has been given in numerous preparations and in various ways. In all ordinary cases the Protoiodide of Mercury is the most desirable preparation, and through the stomach the most eligible mode of administration. I know of no form of the drug so useful and energetic as the triturations of the pharmacies. The first week two grains of the first decimal trituration is given daily; this preparation is then changed for the second or third trituration, which is continued indefinitely. Dr. Lewin has warmly urged the merits of the subcutaneous injection of Mercury. For this mode of administration the Bichloride is used, in doses of from one-tenth to three-eights of a grain. In those instances where, for some unexplainable reason, ordinary methods are not followed by the desired results, this procedure of Dr. Lewin's proves very satisfactory.

In the later syphilitic disorders—tertiary syphilis—the Iodide of Potassium occupies much the same place that Mercury does in the earlier stages. Its effect upon the ulcerations, and in promoting the absorption of the nodules and tumors, and of the gummy deposit everywhere, is certain and gratifying. It is given in doses of from one to five grains three times a day, dissolved in a liberal allowance of water. At times, when neither Mercury nor the Iodides seem exactly to meet the wants of the case, the desired results may be obtained by alternating the remedies.

This is known as the "mixed treatment;" and is recognized as bridging over, in many cases, what would otherwise be a very unfortunate break in the treatment and, consequently, in the progress of the patient toward the possession of a sounder body. It is rarely that a physician finds it necessary to have recourse to other forms of Iodine—the pure drug uncombined, and the Iodides of Sodium and Ammonium.

Among the drugs of secondary importance in the treatment of this disease, are found Nitric Acid, Phytolacca, Sarsaparilla, Stillingia, Arsenic, Aurum, Sulpher, etc. But when the two giant remedies, in intelligent hands, fail to do their work, before recourse is had to the lesser medicines there should be careful inquiry into the hygienic conditions. For the probabilities are that the causes of failure lie in this direction rather than with the remedial agents. It must be insisted upon that the patient be healthily housed, that he have an ample supply of fresh air, that his food be wholesome, his evacuations regular and satisfactory, that he pay due attention to physical culture and the bath, and, in short, so comport himself in all things as to invite the best of health.

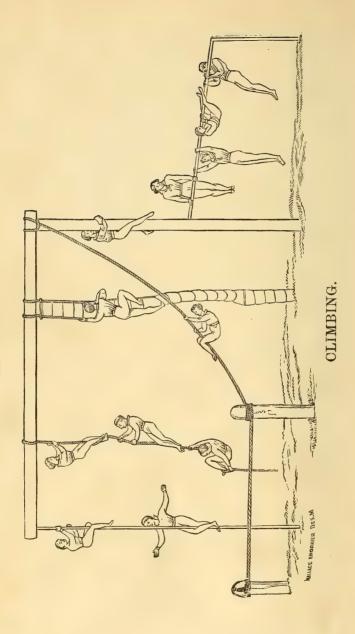
But we have lingered in the lazar-house of Sodom long enough. Shall we not up and away? We can gain nothing by a farther stay. What can we learn from this abode of leprosy, save that sin and death go hand in hand? I am sure we may do much better than allow ourselves to take so low a plane as to be held back from the iniquity only or chiefly by the fear of its truly fearful physical penalties. True manhood is not held back from vice—it is ever drawn irresistably toward the heavens by the divine hunger raging within. The real catastrophy is unseen and unwitnessed save by the man himself, and is infinitely more deplorable than the cancered mouth, and the eaten nostril, and the rotten bones, which are its signal. O what a pitiful and what a needless wreck! What of hope or promise can be said of such an one? Having the heavens at

his command, he yet allowed himself to drift and drift, on and on, going down an ever-blackening stream, until at last he became a part of Gehenna, and Gehenna grew to be the whole of him. "Waste forces within him, and a desert all around, this man stood still on his way across a silent terrace, and saw for a moment, lying in the wilderness before him, a mirage of honorable ambition, self-denial, and perseverence. In the fair city of this vision, there were airy galleries from which the loves and graces looked upon him, gardens in which the fruit of life hung ripening, waters of Hope that sparkled in his sight. A moment, and it was gone. Climbing to a high chamber in a well of houses, he threw himself down in his clothes on a neglected bed, and its pillow was wet with wasted tears. sadly the sun rose; it rose upon no sadder sight than the man of good abilities and good emotions, incapable of their directed exercise, incapable of his own help and his own happiness, sensible of the blight on him, and resigning himself to let it eat him away."

We turn away our faces; and lo, a brighter sunrise greets our eyes. The clouds are breaking away from before the feet of the on-coming dawn. The very mists are decked with crimson and with gold. For it is the opening of the jewelled day of strength and opportunity; and on the threshold in erect and eager poise there stands, in all his wealth of promise, the eagerhearted youth. The day rolls slowly onward up to its high noon of conflict; and like a chieftan leading all his clan, so now the fuller manhood leads its every veteran faculty into the very furnace of the fight as all the noontide quivers with the fervent heat. The day glides swiftly on into the sheeny and empurpled vistas of triumph which mark its setting sun, losing itself upon the very border of the golden strand that, reaching downward from the shining shore, extends into the sea to greet the bark which, thrust out from the shore of time, drops anchor in the haven of eternity.

Up! man, up! There are sweeter melodies waiting to be sung, than ever yet filled the longing ears of humankind. There is nobler work waiting for accomplishment, than man has ever yet done for fellow man. There are sweeter graces still to be, than ever yet bloomed within the human heart. Be satisfied with nothing less than the making of your own the saying of Sir Thomas Fowell Buxton, the great British abolitionist;—"I thank God that I have pursuits in life so deeply interesting as they proceed, and so full of promise in the magnitude of their results, that they deserve to absorb my whole being. I would not change objects in life with any living man." To so live is to be taken beyond a mere avoidance of disgraceful stain from the infernal, and lifted up into the very vestibule of the divine.





APPENDIX A.

THE INDIAN CLUB EXERCISE.

THE PORTION ADOPTED IN THE BRITISH ARMY.

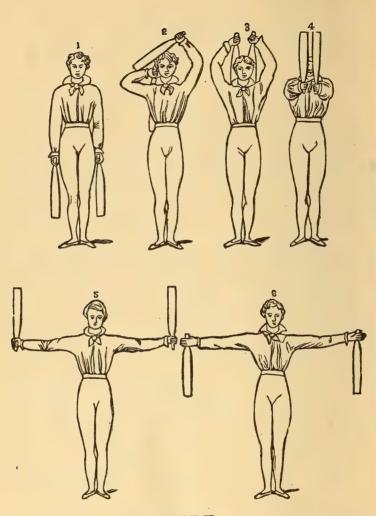
1st. A club is held by the handle, pendent on each side (Plate II. fig. 1);—that in the right hand is carried over the head and left shoulder, until it hangs perpendicularly on the right side of the spine (Plate II. fig. 2); that in the left hand is carried over the former, in exactly the opposite direction (Plate II. fig. 2), until it hangs on the opposite side; holding both clubs still pendent, the hands are raised somewhat higher than the head (Plate II. fig. 3); with the clubs in the same position, both arms are extended outward and backward (Plate II. fig. 6); they are lastly dropped into the first position. All this is done slowly.

2nd. Commencing from the same position, the ends of both clubs are swung upward until they are held, vertically and side by side, at arm's length in front of the body, the hands being as high as the shoulders (Plate II. fig. 4); they are next carried in the same position, at arm's length, and on the same level, as far backward as possible (Plate II. fig. 5); each is then dropped backward until it hangs vertically downward (Plate II. fig. 6); and this exercise ends as the first. Previous, however, to dropping the clubs backward, it greatly improves this exercise, by a turn of the wrist upward and backward, to carry the clubs into a horizontal position behind the shoulders, so that, if long enough, their ends would touch (Plate III. fig. 1); next, by a turn of the wrist outward and downward, to carry them horizontally outward (Plate III. fig. 2); then by a turn of the wrist upward and forward, to carry them into a horizontal position before the breast (Plate III. fig. 3); again to carry them horizontally outward; and finally to drop them backward as already explained; and thence to the first position. All this is also done slowly.

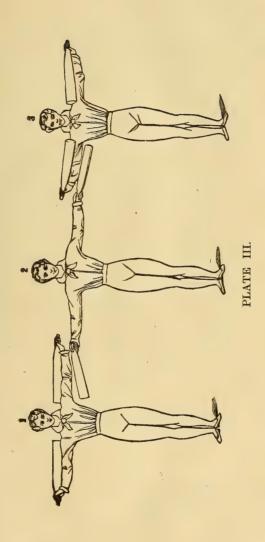
3rd. The clubs are to be swung by the sides, first separately, and then together, exactly as the hands were in the last extension motion.

THE NEW AND MORE BEAUTIFUL PORTION NOW ADDED FROM THE INDIAN PRACTICE.

1st. A club is held forward and upright in each hand, the fore-arm being placed horizontally, by the haunch on each side (Plate IV. fig. 1); both are thrown in a circle upward, forward, and, by a turn of the wrist, downward and backward, so as to strike under the arms (Plate IV. fig. 2); by an oppo-



PLALE II.



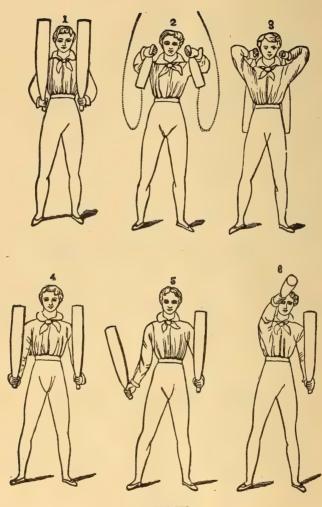


PLATE IV.

site movement, both are thrown back again in a similar circle, till they swing over the shoulders (Plate IV. fig. 3); and this movement is continued as long as agreeable.

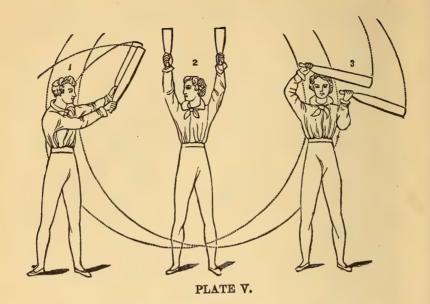
2nd. The clubs are held obliquely upward in each hand, lying on the front of the arms (Plate IV. fig. 4); that in the right hand is allowed to fall backward (Plate IV. fig. 5), and swings downward, forward to the extent of the arm, and as high as the head (Plate IV. fig. 6); the moment this club begins to return from this point, in precisely the same direction, to the front of the arm, that in the left hand is allowed to drop backward, and to perform the advancing portion of this course in the time that the other performs the returning portion, so that each is at the same time swinging in an opposite direction.

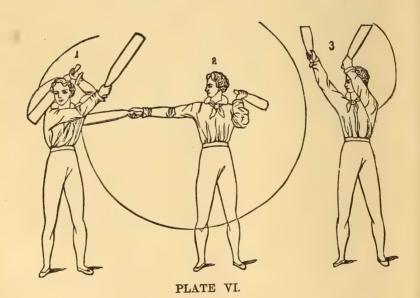
3rd. From either of the first positions now given, the clubs are, by a turn of the body and extension of the arms, thrown upwards and laterally (Plate V. fig. 1);—make, at the extent of the arms, and in front of the figure, a circle in which they sweep downward by the feet and upward over the head (Plate V. fig. 2), and fall in a more limited curve towards the side on which they began (Plate V. fig. 3), in such a manner that the outer one forming a circle around the shoulder and the inner one round the head, (both passing swiftly through the position in the last figure of the first exercise,) they return to the first position;—this is repeated to the other side;—and so on alternately.

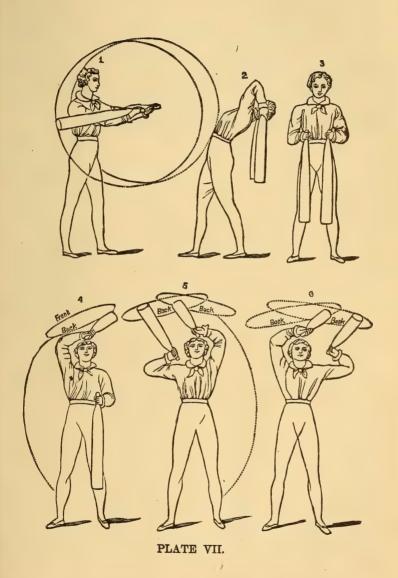
4th. Beginning from either first position, the body being turned laterally,—for example, to the left, the club in the right hand is thrown upward in that direction at the full extent of the arm (Plate VI. fig. 1), and makes the large circle in front and curve behind as in the last exercise (Plate VI. fig. 2), while the club in the left hand makes at the same time a smaller circle in front of the head and behind the shoulders (Plate VI. figs. 1, 2 and 3), until crossing each other before the head (rather on the right side), their movements are exactly reversed, the club in the right hand performing the small circle round the head, while that in the left performs the large one,—and these continue to be repeated to each side alternately.

5th. The clubs being in either first position, the body is turned to one side—the left for example, and the clubs being thrown out in the same direction, make each, by a turn of the wrist, a circle three times on the outer side of the outstretched arms (Plate VII. fig. 1):—when completing the third circle, the clubs are thrown higher to the same side, sweeping together in the large circle in front, as in the second exercise, the body similarly turning to the right; but, instead of forming the smaller curve behind, both are thrown over the back (Plate VII. fig. 2);—from this position the clubs are thrown in front, which is now toward the opposite side, and the same movements are reversed;—and so it proceeds alternately to each side.

6th. In this exercise, the clubs are reversed, both being pendent in front, but the ends of their handles being upward on the thumb sides of the hands (Plate VII. fig. 3). The exercise consists chiefly in describing with the ends of the clubs two circles placed obliquely to each other over the head. For







this purpose, the club in the right hand is, in a sweep to that side, first elevated behind the head, and thence passing to the left (Plate VII. fig. 4), the front, the right (Plate VII. fig. 5) behind, (where its continuation is indicated in fig. 5, and completed in fig. 6), thus forms its circle;—meanwhile the club in the left hand, commencing when that in the right was behind the head, has passed on the back of its circle to the right, (Plate VII. fig. 5), while that in the right hand has passed on the front of its circle to the same side (Plate VII. fig. 5, the parts performed in both being marked by complete lines, and the parts to be done merely indicated);—and they continue, that in the right hand by the back, and that in the left hand by the front, toward the left side (Plate VII. fig. 6), and so on at pleasure circling over the head.

APPENDIX B.

SOME GENERAL OBSERVATIONS ON THE PERFORMANCE OF MOVEMENTS.

- 1. The movements should be performed with great accuracy, and start from a right commencing position. Every motion (bending, stretching, turning, etc.) should be fully achieved. It is only when performed in this definite way that the movements will have all the effects anticipated.
- 2. Each movement must be defined, not only as to form, but also as to the energy with which it should be executed, and the number of times it should be repeated. This may present some difficulties. In the description of the different movements, it is stated in figures as a guide, how often the same movement should be repeated, though with great scope for individual differences. A thoughtful performer will find in his own experience of the movements a good guide in this respect. If a movement leaves an agreeable sensation, this is a sign that it has been performed with appropriate force and frequency. It often happens that a feeling of weariness or a dull pain in the muscles arises in weak persons, unaccustomed to muscular exercise, but this should not induce them to leave off the movements altogether: they should only for a couple of days perform them with less energy, and also reduce their number; and then, after having practised for some time this minimum of movements, they should gradually increase them in both respects. Indeed, weak and ailing persons should always begin the exercises in this moderate way. As a rule, the movements should not induce fatigue, much less any pain in the muscles, which will not happen if the movements be proportioned to the amount of force and other peculiarities of the individual.
- 3. If any real benefit is to be derived from the movements, a wise order with regard to food and drink—so essential to health—must be observed. You see the laborer, when poorly fed, become exhausted and weakened by work, which, if he had substantial food, would increase his powers and strengthen his health. A starving individual cannot derive any benefit for his health from exercises. But people are more frequently at fault in taking inappropriate food or taking food in too great quantity; and it should be borne in mind that the wholesome effects of the movements will be lessened, if not quite neutralized, unless due moderation in eating and drinking be observed.

- 4. The movements should be performed in a well-ventilated space. Fresh air being a condition necessary to health, it follows that the performance of exercises in close, stuffy air cannot bring about the intended wholesome effect, and, indeed, any continuance in rooms with vitiated air should be avoided as injurious to health. This is a well-known fact, but one that people cannot too often be reminded of, as they so often sin against this condition of health, and, in most cases, without any necessity. Our climate too often compels the exercises to be performed within doors, and an over-carefulness too frequently prevents the admission of a sufficient amount of fresh air. Though it be true that one may easily catch cold indoors, it is not less truethat too warm and close an atmosphere develops in us a delicacy and a tendency to diseases which will be sure to manifest themselves sooner or later asunavoidable consequences. Delicacy and over-carefulness are amongst the most dangerous enemies of health, whereas a sensible and moderate inuring to the influences of cool and fresh air is a powerful means for preserving health. Exercises performed in such air have more than double the beneficial influence which they would have when performed in less pure air.
- 5. A frequent and prudent use of cold baths and washing, being of great importance for the preservation of health, should be practised in connection with the gymnastic exercises and immediately preceding them in the morning. If people would but satisfy themselves by experience as to the usefulness of this procedure, then the aversion to the external use of cold water, which even in our days is not unfrequently to be met with, would be sure to disappear. If a reasonable diet be observed, if appropriate gymnastic exercises be daily performed, if fresh air and water become a daily treat, then bodily as well as mental power will increase, and many ailments will disappear.
- 6. A rational use of gymnastic exercises does not imply an endeavor to perform an infinite number of movements, still less an attempt to perform all movements that lie within the reach of possibility. Such efforts have no foundation either in science or sober experience. The human organism is limited in its action, as well on its physical as on its mental side, and whatever goes beyond a certain limit is injurious to it.
- 7. Gymnastic exercises should not be performed within one or two hours after a full meal, nor just immediately before it. The series of movements contained in a prescription should be performed at least once a day, and their beneficial influence will be increased if they are performed several times each day, provided they be well proportioned to the forces and the state of the performer. A weakly person should take only a very limited number of movements each time, and repeat these frequently during the day; or he may divide a prescription, and perform the parts at different times in the day.

After washing or bathing the whole body in the morning, it is most useful to stimulate the action of the organs by some suitable exercises. And we may repeat here what is mentioned in another place, that a person who has adopted the habit of practicing systematic gymnastic exercises will find, by means of observing their effects upon himself, an excellent guide for their application in accordance with the requirements of health.

8. It is most essential not to hold one's breath during the movements, but always to take quiet and deep breaths while performing them. There should also be a short interval between each exercise, which should be devoted to walking up and down whilst breathing deeply—at least, by those who have the use of their limbs. The dress for the exercises should be as light and loose as possible.

DESCRIPTION OF PARTICULAR FORMS OF MOVEMENTS AND THEIR EFFECTS.

ARM MOVEMENTS.

1. STANDING* ARM-RAISING, SIDEWAYS UPWARDS, 8-16 times.

The stretched arms are moved slowly sideways and upwards till they attain a vertical position above the head, hands and fingers well stretched. While moving to this position, the arms are gently rotated outwards, so as to make the palms face each other when stretched overhead. Head and trunk to be kept straight, chest arched forwards, and arms kept well back during the movement. Without delay the arms are again slowly lowered through the same plane, till they re-assume the commencing position.

EFFECT: This exercise causes a stretching of the back and the neck, and a pulling backwards of the shoulders, by bringing the muscles of the back and the back of the neck into action. The fore-arms, hands, and fingers being also kept on the stretch, their extensors (stretching muscles) are contracted during the movement. But the muscles that are put into the strongest action are those that raise the arms.

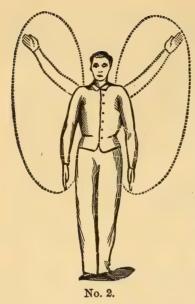
This exercise tends to widen the chest and increase its mobility. It is an appropriate movement in general weakness, nervous debility, anæmia (poorness of the blood), weakness of the chest, difficulty of breathing, adhesion to the pleuræ (the bags surrounding the lungs).



No. 1.

Weak persons may experience some difficulty in raising the arms up to the vertical position; if so, they may at first stop at the horizontal position, till they shall have overcome this difficulty through practice.

^{*}Persons having some difficulty in standing may perform this and similar movements in a sitting posture.



2. STANDING ARM-CIRCLING, 8-16 times.

The stretched arms are slowly moved straight forwards, upwards and sideways down again, so as to describe a circle. After some practice the slow measure may alternate with a somewhat quicker performance.

During this exercise the muscles of the back, and those of the back of the neck, should keep the spinal column and the head quite straight; the hands also stretched by their extensors.

EFFECT: The movement is carried out by muscles situated on the shoulders and the blade-bones. It acts energetically on the shoulder-joints, increasing their strength and mobility; it also widens the chest, and has a blood-relieving effect on the organs of the chest and head—that is, relieves these organs from congestion.

8. STANDING ARM-THRUSTING, FORWARDS UPWARDS, 6—12 times.

The stretched arms are quickly raised forwards upwards, so as to attain a vertical position at each side of the head; then they are slowly lowered sideways downwards, close to the sides.

EFFECT: This movement resembles the preceding one, in so far as it describes the same figure, and calls the same muscles into action; but the raising of the arms is performed in quicker time and with greater energy (a kind of jerking motion), on which account it also has a more powerful effect. It may be used with advantage as a sequel to the preceding exercise, when this one has been practised for some time.

4. STANDING SHOULDER-CIRCLING, 10-12 times.

The shoulders are slowly moved, so as to describe a circle forwards, upwards, backwards, and downwards.

EFFECT: This exercise is performed by muscles attached round the shoulder-joints and to the shoulder-blades. The shoulder-ring (i. e., the shoulder-blades and the collar-bones), as well as the joints and muscles belonging to the shoulders, are benefited by this exercise. During its performance the head is kept well up and the back stretched, which causes this exercise to have a very powerful effect on the respiratory organs. It counteracts weakness of the chest and tendency to catarrh of the lungs and consumption.

5. WING-STANDING ELBOW-MOVING, BACKWARDS, 8—10 times.

The hands are placed on the hips, the thumbs directed backwards, the other fingers forwards, the elbows sideways. From this position the elbows are slowly moved backwards as far as possible, without any violent effort. Then they are allowed to go back to the commencing position, and the exercise is repeated in the same way. The head and the back should be well stretched, for in this case a powerful pulling backwards of the shoulder-blades and shoulders, and also an expansion of the chest take place.

EFFECT: This exercise counteracts a tendency to flatness of the chest, in strengthening the muscles that draw the shoulders and blade-bones backwards and arch the chest forwards. It counteracts tendency to consumption, asthma, and weakness of the chest.



No. 5.

6. STANDING ARM-BENDING AND STRETCHING, UPWARDS, 8-16 times.

The fore-arms are quickly bent upwards against the upper arms, the elbows kept close to the sides, the fingers slightly bent and pointing towards the shoulders. From this position the arms are sharply and energetically stretched upwards to a vertical position above the head (points of fingers foremost), the palms of the hands facing each other. This alternate bending and stretching of the arms to be repeated as stated above.

EFFECT: See Note to No. 9.

7. STANDING ARM-BENDING AND STRETCHING, SIDEWAYS, 8—16 times.

The arm-bending is performed as in the preceding exercise, then the arms are stretched horizontally sideways in a sharp and energetic manner (points of fingers foremost), the palms turned downwards, as in the figure No. 11. The arms should be kept well back, so as to ease the chest and arch it forwards. The bending and stretching to be repeated as stated above.

EFFECT: See Note to No. 9.



No. 6.

8. STANDING ARM-BENDING AND STRETCHING, FOR-WARDS, 8—16 times.

From the bend-position (see 6) the arms are quickly and energetically stretched horizontally forwards parallel to each other, the palms facing each other.

EFFECT: See Note to No. 9.

9. STANDING ARM-BENDING AND STRETCHING, BACK-WARDS, 6-12 times.

From the bend-position (see 6) the arms are stretched backwards in as high a level as they possibly can be brought to without too great exertion, the palms facing each other. The head and back to be kept upright and quiet during the movement.

Note to 6, 7, 8 and 9.—The above mentioned armstretchings in different directions all proceed from a common starting position—the arm bend position. They act powerfully on the flexors and extensors (bend-



No. 8

ing and stretching muscles) of the arms, and the muscles of the chest; the back and the neck also have an important share in the action. Moreover, these arm-movements increase the suppleness and strength of the shoulder and elbow joints, and tend to widen the framework of the chest. Thus, the arm-stretching UPWARDS widens the chest more especially in its lower and middle parts. The arm stretching SIDEWAYS expands the chest especially in its further and upper parts. The arm-stretching FORWARDS causes the hinder and lower parts of the lungs to take in more air. If, in the arm-stretching BACKWARDS, the head and the back be kept perfectly straight, and the shoulders drawn backwards, this movement causes a widening of the chest in raising the upper ribs by means of a passive stretching of the muscles attached to them. Altogether, these bendings and stretchings of the arms in different directions have an extensive and powerful influence on respiration and circulation, besides their strong action on the muscles concerned in the movements, and above referred to. This assigns to them an important place in a prescription of movements for a general strenthening of the body. They are a specific remedy against weakness and rheumatic pains in the muscles and joints concerned in performing these movements. To persons with weak breathing power-common in those who lead a sedentary life-these movements are exceedingly valuable on account of the effect they have in strengthening the organs of respiration. In cases of poorness of the blood, nervous debility, and general weakness, they are useful, stimulating, as they do, the vital functions. In cases of chronic catarrh of the lungs, these movements are serviceable as a blood-relieving means. Persons with a week chest should, however, use them with due precaution. In cases of severe lung or heart disease, they should never be used without the advice of the physician. The energy in the performance of these movements should always be modified according to different individual circumstances.

The above arm-stretchings may also be executed alternately—that is, instead of stretching both arms in the SAME direction, after having been previously bent upwards, they are stretched simultaneously in DIFFERENT directions, and then made to alternate with each other; thus: (A) one arm upwards, the other downwards; (B) one upwards, the other forwards; (c) one forwards, the other sideways; (D) one upwards, the other sideways. In any case the respective positions of the arms should be exchanged several times.

The effects of these alternate arm-stretchings in different directions are more powerful than when both arms are stretched in the same direction.

10. STANDING ARM-BENDING FORWARDS AND ARM-FLINGING OUTWARDS, 6-12 times.

Each bending and stretching in all the above-mentioned exercises should be completed with great accuracy.

The upper-arms are raised horizontally, with the forearms sharply bent upon them, hands and fingers stretched, palms turned downwards. From this position the fore-arms are smartly and energetically thrust outwards. without any displacement of the upper-arms. The forearms being again quietly bent forwards in the same plane, the flinging motion outwards is repeated anew.

EFFECT: This movement has very much the same effect as the arm-stretching sideways (see Nos. 7 and 9), but it causes a stronger tension forwards of the chest; hence it is a specific remedy against a flattened

and weakly chest. It is also especially strengthening for the muscles that stretch the arm in the elbow-joint.

11. CROSS-STANDING ARM-ROTA-TION, INWARDS AND OUT-WARDS, 10-20 times.

The arms, being previously stretched sideways (cross-standing position), are rotated round their long axis inwards (pronation) and outwards (supination). rotatory movement executed partly in the shoulderjoint, partly through the radius being rotated round the ulna (the elbow-bone), which latter action causes the hand to be sturned also.







No. 11.

EFFECT: This movement, though apparently very simple, calls forth the action of a great many muscles situated on the arms, the shoulder, the chest, the back, most of them being the same as those concerned in bending and stretching the arms, but in this case acting in a peculiarly modified manner. Besides strengthening the shoulder-joints and the muscles concerned, it has a blood-relieving effect on the organs of the chest.

It may also be combined with arm-raising (see No. 1); in this case it strongly influences the respiration.

12. HAND- AND FINGER-MOVEMENTS, 8-16 times.

(A) The hand may be bent towards the fore-side of the arm and stretched towards the back of the arm; it may also be bent outwards ("abducted")—that is, to the side of the thumb; and it may be bent inwards ("adducted")—that is, towards the side of the little finger.

All these movements should be performed to the extent that the wrist-joints admit of, and repeated 8—16 times in each direction.

(B) A simultaneous and energetic bending of all the fingers, followed by a stretching in the same manner, to be performed as many times as the above.

(C) A simultaneous spreading and closing of all the fingers (being well

stretched), also repeated as above.

EFFECT: These hand and finger exercises, though of great importance, are generally very much neglected. They call into action nearly all the muscles of the fore-arm, and exert a direct influence on the joints of the wrist and the fingers. If duly performed two or three times a day, these movements will counteract the weakness that so frequently arises in the hands and the arms from much writing, practising on the piano or the violin, etc. These movements are also effective against cold hands; and they are suitable, in cases of disturbances in the organs of the chest, as a means of relieving these organs from congestion.

These hand and finger exercises may also be performed in combination with the arm-raising (see No. 1) or the arm-rotation (see No. 11,) which will greatly increase their effect.

13. STANDING ALTERNATE ARM-THRUSTING, ONE ARM UP, THE OTHER DOWN, 8—16 times.

One arm being stretched upwards, the other downwards, the respective positions of the arms should be exchanged by means of a quick and energetic thrusting of the down-stretched arm upwards and the up-stretched arm downwards.

EFFECT: This movement tends to increase the mobility of the shoulderjoints and strengthen the muscles of the shoulder; it also stimulates respiration and circulation.

14. HALF-STRETCH -GRASP-STANDING ARM-CIRCLING, 8—16 times.

One arm being stretched up, the hand takes hold of a bar or a door-post, or anything of the kind, at arm's length above the head. The free arm performs

the circling motion that is described in No. 2. The movement should be repeated, and the position changed alternately with both arms.

EFFECT: The starting position expands the chest, and by this means this arm-movement has a more powerful influence on the respiration and circulation, without any great increase in the exertion.

15. HALF-STRETCH-GRASP-STANDING ARM-BENDING AND STRETCHING, 6—12 times.

After having assumed with one arm the starting position indicated in No. 14, the other arm should be bent and stretched as described for both arms in No. 6. A proper alternation in position and motion of the arms should be observed.

EFFECT: This exercise has a strengthening effect on respiration and circulation.

16. REACH-GRASP-STANDING ARM-BENDING AND STETCHING, 6--12 times.

The performer should stand facing a bar, a wall or a closed door, at a distance of three feet. He then should place his hands against the object mentioned, separating them at shoulder's breadth. This being done, the body is inclined forwards, resting its weight on the arms, which should be bent at the elbow-joints to right angles—elbows turned outwards on a level with the shoulders. Now the arms are slowly stretched again—somewhat resisted in this motion by the weight of the body—then the arms are bent again, and so on-

EFFECT: This exercise calls the extersor muscles of the arms into very strong action, the stronger the more the weight of the body is thrown upon the arms besides, the bending of the arms in this position expands the chest and promotes respiration.

17. TRUNK-LIFTING BY THE ARMS, 5-8 times.

This exercise requires some kind of apparatus—a fixed horizontal bar or board, or two hanging thick ropes fixed with two feet distance between them; in fact, anything of this kind arranged in the room will do for the purpose when attainable by the up-stretched arms. The hands grasp the support with up-stretched arms, having between them a distance corresponding to the breadth of the shoulders. This being done, the arms are slowly bent, thereby effecting a lifting of the body; the arms then are slowly stretched again, and the body lowered till the feet touch the ground (toes first).

This exercise acts very strongly upon the flexor muscles of the arms and on the respiratory organs.

A certain bodily strength is required for this movement, hence it cannot be performed by weak persons. It should NEVER be used in severe cases of lung or heart disease.

LEG MOVEMENTS.

18. STANDING ALTERNATE TOE-AND HEEL-RAISING, 10-12 times.

The heels are first raised so as to throw the whole weight of the body on the toes, then the heels are lowered simultaneously and the toes raised, thus throwing the weight of the body on the heels, and so on-During the exercise the body should be kept upright, only accom-

modating itself so far as to be able to keep its balance during the movement.

Effect: This exercise is performed by the action of the muscles of the leg proper and of the feet, and consequently has a strengthening influence on these muscles. Besides, it brings a considerable number of muscles into action for the preservation of equilibrium during this exercise. This movement is a remedy against cold feet, which so often are to be found in people who lead a sedentary life, and generally in people who suffer from poorness of the blood and general debility. It is also a remedy against stiffness in the ankle-joints.

Note.—This alternate raising of the heels and the toes may be performed, not only from the general fundamental position (as represented in fig. 18a), but also in alternating this position with the close position of the feet, as

represented in fig. 18b. This turning inwards and outwards ("closing" and "opening" of the feet), added to the alternate raising of the heels and toes, also increases the effects of the exercise in tending to strengthen the hip-joints and the surrounding muscles.



No. 18b.

19. WING-STANDING FOOT-CIRCLING, 12-20 times.

This movement may be performed either standing, with the hands placed firmly on the hips ("wing-standing position"), or sitting, with support for the back. If performed from the former position, one leg should be stretched forwards



and the foot caused to perform a circling motion. which should be repeated several times, first to one side, then to the other. Persons who experience some difficulty in standing on one leg may support themselves with one hand against some fixed object, or perform the foot-circling sitting. In the lastnamed case the movement may be performed either alternately or simultaneously with both feet. If alternately, one knee should be laid across the other, the support thus afforded to the leg by which the movement is performed helping to concentrate the motion more exclusively on the ankle-joint. If performed simultaneously with both feet, the legs should be stretched forwards, the heels resting on the floor. The feet then should perform the circling motion several times inwards and then several times outwards.

Effect; This movement is executed by the mus. cles of the leg proper. It increases the mobility of mobility of the ankle-joint, makes the feet warm, and relieves internal organs from undue affluence of blood.

20. SITTING TOE-BENDING AND STRETCHING, 12-20 times.

In the above exercise (19) the toes are put into some motion, but in a very imperfect manner, especially if the foot-circling be not performed in very wide shoes. A real exercise for the toes will be supplied by their bending and stretching, without moveing the rest of the foot. This movement must be performed either without shoes or in very wide and soft ones.

The importance of this exercise lies in the fact that it can counteract or remedy the tendency to the deformity and partial paralysis of the toes so often brought about through unsuitable shoes and stockings.*

EFFECT: This exercise, besides keeping up the mobility of the toes by strengthening their muscles, also tends to warm the feet.

21. LYING LEG-CIRCLING, 8-16 times.

Head and trunk should rest horizontally on some plane surface raised above the ground, the legs stretched beyond the support. (A strong person may keep himself in this position by taking hold of the edge with his hands; a less strong person should have some assistance with pressure on the shoulders, as seen in fig. 21; very weak people should never perform this exercise



No. 21.

at all.) The legs perform simultaneously a circling motion, first to the left then to the right.

EFFECT: This exercise acts upon the abdominal muscles and those surrounding the hip-joints, and has a special blood-relieving and strengthening effect on the organs in the lower abdomen (the pelvis). If performed with the arms stretched above the head it increases respiration.

22. HALF-LYING LEG-BENDING AND STRETCHING, 6-10 times.

The back and head recline backwards on a slanting support. One leg at a time is sharply drawn up, with the knee bent towards the side of the chest, and then fully stretched forwards, the point of the foot foremost. This being repeated several times, the other leg should perform the same motion.

EFFECT: When performed with energy, this exercise has a strengthening influence on the legs and a blood relieving effect on the upper parts of the body.

23. STANDING KNEE-BENDING AND STETCHING, 5-10 times.

First the heels are raised, then the knees are slowly bent to right angles, then slowly stretched again, and finally the heels lowered to the ground. The exercise is repeated as stated above. The trunk and head should be kept quite straight during the exercise. When, through practice, stability in

^{*} The cause of the evil must, of course, be got rid of in order to obtain real results from the exercise.



performance is secured, the slow movement may alternate with a quick one.

EFFECT: This exercise acts strongly on the extensor muscles of the legs; and, on account of the rigidity of the head and back that should be observed during the exercise, it also brings the extensor muscles of these parts into action. It tends to make the joints of the lower extremities supple and strong, and has a blood-relieving effect on the upper parts of the body.

Note.—The same exercise may be performed from—(A) Wing-Standing position (hands on hips); (B) Stretch-Standing position (arms stretched upwards); (c) Cross-Standing position (arms stretched sideways); by which positions, more especially the two last-mentioned ones, the respiration and circulation are increased.

24. BALANCE STANDING LEG-MOVEMENTS.

No. 23. (a) Wing Hook-standing Leg-Stretching, forwards, 4-8 times.



No. 24.

The hands are placed on the hips. One knee is bent upwards, so that the thigh forms a right angle with the trunk, and another with the leg proper. Now the knee is stretched forwards, so as to bring the leg proper in a straight line with the thigh (point of foot foremost during the whole exercise). The knee should again be bent, and then the foot placed down heel to heel with the other one. The same exercise with the other leg, and so on alternately.

(b) Wing-Hook-Standing Leg Stretching, outwards, 4-8 times.

The knee being bent upwards as in the preceding exercise, and turned outwards, the leg should be stretched out and finally brought back to the fundamental position (heel to heel). Now the same exercise with the other leg, and so on alternately.

(e) Wing-Standing Leg-Folding and Stretching, backwards, 4-8 times.

The leg first tightly bent (folded) in the knee-joint, is stretched backwards (see 24c) as far as possible, and finally brought back to the fundamental position. Then the other leg performs the same exercise, and so on.

(d) Wing-Standing Log-Circling, 6-10 times.

The stretched leg performs a wide circling motion directed forwards, outwards, and backwards. It then re-assumes the fundamental position, and the other leg performs a similar motion.



Note.-The four movements in the above group require a precision and readiness in the action of the muscles, so that they cannot be well performed if one has not already had some practice in exercises. They gradually increase the power of balancing, and the influence of the will over the muscles: they also tend to make the lower extremities supple and elastic.

25. WING-STANDING TERNATE KNEE LIFT-ING. 15-20 times.



No. 24d.

No. 24c. The hands are placed on the hips; the knees are alternately lifted in a bent position as quickly and as

high as is possible, without any too great exertion. Thus the weight of the body is thrown now on one foot now on the other (the toes first touching the ground). Head and trunk should be kept quiet in an upright and easy position, the chest well arched forwards. The exercise may begin in a slow walking measure, and then gradually increase in rapidity till it attains the quickness of running. In the last case it becomes very straining and should not be exaggerated, but wisely moderated according to individual circumstances.

EFFECT: This exercise, besides strengening the lower extremities and making them supple and agile, greatly stimulates respiration and circulation, and, if performed with due moderation, produces an agreeable and genial warmth.

(The observations in the beginning of this chapter should be constantly borne in mind-namely, that all the exercises should be performed with the greatest accuracy and attention, in order to secure the affects aimed at.)



No. 25.

TRUNK MOVEMENTS.

Movements of the trunk may be performed in the following main directions: -Bending forwards, backwards, and to the sides, also turning or rotation round its long axis. The trunk may also be made to describe a circle ("circling," or moving in circumduction), which is, properly speaking, a combination of the consecutive bendings of the trunk in all the above-mentioned directions.

26. WING-STANDING TRUNK-BENDING, FORWARDS AND BACKWARDS, 5-10 times.

The trunk is slowly bent forwards from the hip-joints, then raised again and



bent backwards in a similar manner, as far as the individual capacity allows, without any great exertion. During the exercise the legs should be kept straight, the chest arched forwards, the head not allowed to droop.

EFFECT: By means of the alternate gentle contractions and extensions of the muscles of the further and hinder side of the trunk, caused by this exercise, it stimulates and facilitates the functions of the organs in the chest and the abdomen. It causes an alternate stretching and shortening of the great veins, and thus stimulates the circulation of the blood within the abdomen, the chest, and the head, thereby counteracting many disturbances brought about by impediments in the circulation.

27. STANDING SIDE-BENDING, 5-10 times.

as it is possible without any great exertion, the legs

No. 26. The trunk is slowly bent alternately to the left and the right without any twisting (fig. 27). The bending should be carried as far



kept straight; head and arms should accompany the motion without being moved separately. The effects of this exercise may be increased in strength if it is performed from—(A) STRETCH-STANDING POSITION (arms stretched above the head, see No. 6); (B) NECK-REST STANDING POSITION (arms bent up behind the head, fingers dovetailing in each other, the back of the head resting against these; see fig. 2Sb); (c) HALF-STRETCH STANDING POSITION (ONE arm stretched above the head), with bending to the opposite side of the stretched arm.

EFFECT: This exercise, like the preceding one, greatly increases the rapidity of the circulation, especially in the portal vein (which carries blood from the stomach and intestines to the liver). If properly performed, the exercise is distinctly felt in the muscles (and the skin) at each side of the waist, which are alter-

No. 27. (and the sk nately contracted and extended.

28. TRUNK-TURNING, 5-10 times.

(a) Wing-Standing Trunk-Turning.

Hands placed on the hips. The trunk is turned (rotated) round its long axis alternately to the left and the right without moving the legs. The back and the legs are kept straight during the movement.

(b) Neck-Rest Standing Trunk-Turning.

The commencing position should be taken as in fig. 28b (the elbows point-

ing sideways, not forwards); then the movement should be performed as indicated above.

EFFECT: A great number of the muscles of the trunk (having such a position relatively to each other as to make them co-operate in the turning) are brought into action by this movement, which, though effective, is by no means one requiring much exertion. The energy of its execution can easily be modified according to individual strength. it acts in a stimulating manner on the spine, on the organs of the abdomen, and also on respiration, this more especially when performed in the last-mentioned position. The pressure of the abdominal muscles on the intes-



No. 28b.

tines, alternating from one side to the other, effects on them a kind of kneading motion which stimulates their function. The turnings also cause an alternate shortening and extension of the great blood-vessels, and promote circulation,

Note.—This movement may be strengthened, if performed with the feet in close-position (see fig. 18b).

29. WING-STRIDE-STANDING TRUNK-CIR-CLING, 6--10 times.

The commencing position is, hands on hips, feet placed sideways with a distance of two feet between them. The trunk is moved from the waist, describing as large a circle as possible, first to the left then to the right. The legs should be kept straight, the hips and head steady. (Persons who find it difficult to stand may perform this exercise sitting.)

EFFECT: This movement is performed chiefly by means of the muscles of the trunk situated around the hips. It causes a general compression of the viscera of the abdomen, and tends to remove constipation. By effecting an alternate shortening and extension of the great bloodvessels, it promotes the circulation of the



No. 29.

blood, more especially within the abdominal cavity. It counteracts many disturbances within the organs of the true pelvis (below the abdomen), such as catarrh of the bladder or the womb, hæmorrhoids, &c.

NOTE.—This exercise may be strengthened in its effects, if, during the circling movement, the trunk is also turned (rotated round its long axis) to the left whilst circling to the left, and VICE YERSA.

30. WING-FORWARD-LYING TRUNK-HOLDING, 3-6 times.

The performer having placed himself on a bench covered by a mattress,* in such a position that the front of his legs is supported up to (but not beyond)



No. 30.

the hip-joints, and kept steady in this position by a person sitting on his legs (see fig. 30), or a broad strap being fixed across them, he should place his hands firmly on his hips, and then raise his head and trunk as much as possible.

Having kept this position a short while, then he should slowly lower head and trunk towards the ground; then again perform the raising, and so on, alternately raising and lowering the trunk.

EFFECT: This exercise brings into strong action the extensor muscles of the back and

the neck. It is an excellent movement for the development of an upright and easy bearing. It keeps the extensor muscles at both sides of the spine in equilibrium, thus counteracting any tendency to lateral curvatures of the spine. It counteracts, more than any other movement, the stooping of the frame which is so easily induced in weak or near-sighted people, and so common in old age.



31. WING-BACK-LYING TRUNK-RAISING, 4—8 times.

In this exercise the back of the legs rests on the support, and they are kept in their place as mentioned in No. 30. The upper part of the body is beyond the support, and is kept in a horizontal position by the action of the abdominal muscles. After having maintained this

position for a short while, the trunk is raised to a sitting position, then slowly lowered to the horizontal position, and so on.

EFFECT: This exercise has a very strengthening effect on the muscles of the abdomen, and on digestion, it is also an effective means against costiveness.

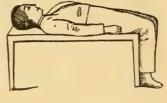
^{*} A sofa or some chairs put together will also do for the purpose.

(To weak persons this exercise is rather straining, and they want, at first, somebody to help them. Strong persons may increase the effect of the movement by keeping their arms stretched above the head)

32. SIT-LYING TRUNK-RAISING, 3-6 times.

The whole upper part of the body from the knees rests on the support.

The knees are bent, the foot-soles resting on the floor as when sitting. Some pressure should be applied on the knees, either by some person's hands or by a fixed strap, to enable the performer to raise the trunk steadily (keeping it quite stiff) to sitting posture. From this he should again go slowly down on his back, and so on.



No. 32.

EFFECT: This exercise has very much the same effect as the preceding one, but is somewhat easier to perform.

33. STRETCH-STRIDE-STANDING TRUNK-BENDING, FORWARDS AND BACKWARDS, 4—8 times.

The arms are stretched above the head, the feet placed sideways at a distance of two feet from each other. From this starting position the trunk is slowly bent forwards and downwards, as far as the individual capacity allows without any too great exertion. It is then slowly raised again, and bent backwards under the same conditions. The arms and head should not be moved separately, but accompany the motions without any change in their relative positions.

This exercise causes an alternate shortening and lengthening of the muscles on the further and hinder parts of the trunk and pelvis. It also causes a similar shortening and extension of the veins, by means of which the circulation of the blood is promoted. It has a stimulating effect on the functions of the vital organs in general.

34. CROSS-STRIDE-STANDING JERK-TURNING, 6-10 times.

The arms are stretched horizontally sideways, the feet placed sideways as in the preceding exercise. A sudden and jerking (but not violent) turning (rotation) of the trunk is performed to the left and right alternately. The arms are kept steady in their position and the legs straight.

EFFECT: This exercise is performed chiefly by the muscles situated round the hips, and acts powerfully on the abdomen and pelvis, accelerating circulation more especially in these parts of the body. It has a highly stimulating effect, and is a specific in difficult breathing, as in lung emphysema and cramp in the chest (ANGINA PECTORIS).

35. WING-STRIDE-FORWARD-BEND-SITTING SCREW-ROTATION, 8-16 times.

The performer is seated with the feet separated and hands on hips. The head and the trunk are inclined forwards so as to form an acute angle at the hip-joints. In this position the trunk is rotated alternately to the left and right by quick jerking (screwing) motions without losing the inclined position.

EFFECT: This exercise is most effective against slow circulation in the lower abdomen, in chronic diarrhœa, gastric catarrh, hæmorrhoids, catarrh of the bladder. &c.

HEAD MOVEMENTS.

The movements of the head (or, properly speaking, of the neck) consist, like those of the trunk, in Bending, Turning (rotation), and circums (moving in circumduction). They are easy to understand from description alone, without any illustrations being necessary.

36. HEAD-BENDING, FORWARDS AND BACKWARDS, 5-10 times.

The head is slowly bent forwards, then raised in the same manner, and finally bent backwards as far as can be done without any great exertion; then raised again, and so on. The rest of the body is kept steady during the exercise.

37. STANDING HEAD-BENDING SIDEWAYS, 5-10 times.

The head is bent alternately to the left and right, as far as the mobility in the vertebræ of the neck permits without any great strain, and without moving the rest of the body.

38a. STANDING HEAD-TURNING, 5-10 times.

The head is turned alternately to the left and right, as far as convenient. This should be performed without any bending of the head or turning of the shoulders.

38b. STANDING ALTERNATE HEAD TURNING AND BENDING, 5-10 times.

The head, being previously turned to the left, is bent forwards, then raised and bent backwards, still retaining its turn-position; then raised again and turned to the opposite side, where the bendings are performed in the manner before stated.

39. STANDING HEAD-CIRCLING, 6-10 times.

The head describes slowly as wide a circle as can be done without straining, several times to the left and then as many times to the right. The shoulders, as well as the rest of the body, to be kept perfectly quiet during the motion.

Note.—None of the above head-movements call for any great muscular exertion, but they have not the less a general stimulating and strengthening effect on the muscles of the neck. They counteract and cure stiffness in the joints between the vertebræ of the neck and the head. They also promote circulation in the brain, especially if performed with deep breathing. Consequently they are effective in cases of either congestion of blood in the brain or too small supply of blood to that organ.

The following movement, being a complex one, can be performed in an accurate manner only by people who have acquired some previous practice in simple exercises.

It should be borne in mind that the organs of movement in man possess a capability of great VARIATION in the form of movements, as well as the possibility of attaining by practice the utmost perfection of purity and beauty of

form in each of them. What an immense difference between the tottering movements of the infant, or the want of precision in the performance of new motions in any untrained person, when compared with the great perfection in execution to which a person may attain by training.

Any exercise that, being in strict accordance with physiological and hygienic laws, is calculated to overcome our natural "awkwardness," and bring about ease and precision and general sense of equilibrium in movement, is a well-defined and good exercise.

It is by the use of such exercises that the will acquires the full domination over the so-called voluntary muscles, and enables them to perform the movements in accordance with the ideal formed by the mind.

This is in perfect analogy with the methodical mental exercises for the brain, by means of which the mental faculties are brought to their development and clearness, and the individual exercised in the use of them.

40. PASS-POSITIONS WITH FOOT- AND ARM-CHANGING, 6-12 times.

Essentially the same form of movement as the "fencing pass." The feet are placed at a right angle, heels together, the arms are bent in the elbow-joints, fingers pointing towards the shoulder. Now the left foot is moved in its own direction (outwards), and placed on the floor at a distance of three

foot-lengths from the heel of the light foot. At the moment that the foot touches the floor, the left knee is bent so as to stand just over the point of the foot, and the weight of the body is thrown on this leg. The other leg is stretched, so as to form one straight and slanting line with the trunk and head. Simultaneously with the left foot assuming the described position, the left arm is stretched above the head and the right one backwards (see fig. 40). Now the slanting position is resumed (heels together, arms bent), and then the same movement should be performed to the opposite side by the right foot and arm.



No. 40.

This exercise may be varied thus:—

- (A) Instead of moving the left foot three foot-lengths forwards-outwards, as in the above, it may be moved the same distance backwards-outwards (that is, in a straight line with the long axis of the other foot). In this case the further (the right) knee is bent, and the corresponding arm stretched upwards, the other backwards, and so on.
- (B) The foot may be placed three foot-lengths straight forwards, or three foot-lengths straight backwards. In the last cases, as in the first one, the movement should be performed the same number of times with one foot as

with the other, the knee of the FURTHER leg bent and the corresponding arm stretched upwards, the other backwards.

The exercise should be performed slowly at first, but when due accuracy in its performance is acquired, it may be performed with great smartness. An alternation of slow performance with more rapid will prove advantageous.

EFFECT: This exercise brings about a very extensive nervous and muscular action, and has a general stimulating and strengthening effect. It produces elasticity and ease in bearing. However, it should, like all other movements for hygienic purposes, be kept within the limits of moderation.

APPLICATION OF MOVEMENTS FOR SPECIFIC PURPOSES.

Strengthening Movements for persons whose daily occupations do not afford them sufficiently all-sided muscular exercise, and who are suffering, more or less, from poorness of the blood (anæmia), muscular and nervous debility, weak respiration, gout, obesity.

PRESCRIPTION I.

Standing Arm-Raising, sideways upwards Neck-kest-Standing Trunk-Turning Standing Alternate Toe- and Heel-Raising See No. 1 28B 18A Standing Arm-Bending and Stretching upwards Wing-Stride-Standing Trunk-Circling Wing-Hook-Standing Knee-Stretching forwards R 29 Standing Head-Circling Wing-Standing Elbow-Moving Backwards PRESCRIPTION II. Standing Arm-Circling No 2 Standing Alternate Toe and Heel-Raising 18A 3. Wing-Standing Trunk-Bending, forwards and backwards 4. Wing-Standing Alternate Knee-Lifting 5. Standing Arm-Bending and Stretching, upwards, sideways, and forwards 6. Stretch-Standing Side-Bending 26 25 Standing Arm-Raising, sideways upwards, with Rotation inwards and outwards 36, Standing Head-Bending, forwards, backwards, and sideways 37 9. Standing Arm-Raising PRESCRIPTION III. 1. Standing Arm-Thrusting, forwards upwards 3 Cross-Standing Knee-Bending and Stretching 23C 28B, 27 6, 7, 8 26 3. Neck-Rest-Standing Trunk-Turning and Side-Bending Standing Arm-Bending and Stretching, upwards, sideways, and forwards Wing-Standing Trunk-Bending, forwards and backwards Half-Lying Leg-Bending and Stretching Standing Head-Circling and Head-Turning 39, 38A 8. Standing Alternate Toe- and Heel-Raising 18A, B Stretch-Stride-Standing Trunk-Bending, forwards and backwards-83 10. Standing Arm-Raising PRESCRIPTION IV Standing Arm-Raising Standing Alternate Toe- and Heel-Raising R Cross-Stride-Standing Jerk-Turning Wing-Standing Alternate Knee-Lifting Stretch-Standing Side-Bending 6. Standing Shoulder-Circling Wing-Hook-Standing Knee-Stretching 24A Standing Head-Bending, forwards, backwards, and sideways, alternately with Head-Circling 36, 37, 39 Standing Arm-Bending and Stretching, upwards, sideways, forwards, and 7, 8, 9 0. Stretch-Stride-Standing Trunk-Bending, forwards and backwards PRESCRIPTION V. Standing Arm-Raising Standing Alternate Toe- and Heel-Raising 3. Standing Shoulder-Circling

4. Standing Arm-Thrusting, forwards upwards	3
5. Wing-Stride-Standing Trunk-Circling	29
6. Wing-Standing Leg-Circling	24D
7. Standing Head-Bending, forwards, backwards, sideways, Head-Turning	
and Circling - 36	39
8. Standing Arm-Raising, sideways upwards, with Arm-Rotation and Hand	1 10
and Finger-Bending - 1, 1	1, 12
9. Wing-Standing Trunk-Bending, forwards and backwards	26
10. Cross-Standing Knee-Bending and Stretching 11. Neck-Rest-Standing Trunk-Turning	23B 28B
12. Standing Arm-Bending and Stretching, upwards, sideways, forwards and	SOB
backwards 6, 7,	8 0
13. Stretch-Standing Side-Bending	27A
14. Stretch-Stride-Standing Trunk-Bending, Forward and backward	3
	•
PRESCRIPTION VI.	
1. Standing Arm-Thrusting, forwards and upwards	3
2. Stretch-Standing Side-Bending	27 A
3. Wing-Standing Alternate Knee-Lifting	25
4. Neck-Rest-Standing Trunk-Turning	28B
5. Standing Head-Bending, Turning, and Circling - 36	-39
6. Standing Arm-Bending and Stretching, Simultaneously in different direc-	
tion 9A,	
7. Wing-Standing Trunk-Bending, forwards and backwards	26
8. Pass-Positions, with Foot- and Arm-Changing	40
9. Standing Arm-Circling	Z

The above prescriptions are progressive, so as to be serviceable for different conditions of health and strength. Weak persons should begin with the first prescription, and during the first days perform the movements in a gentle manner, and repeat each of them only a few times; then they should gradually increase the frequency and energy in the performance as they feel their strength increase. By degrees, as health and strength increase, they should take up the next prescription, and so on.

After having gained some practice and experience in gymnastics, the performer can try and put together other movements than those given in these prescriptions.

There should, however, not be too frequent changes, for, so long as a person feels benefited by performing the movement belonging to a certain prescription, he should go on with this one, till he feels that its salutary influence becomes diminished—then it is time to make a change.

MOVEMENTS FOR GROWING YOUNG PEOPLE WHO DO NOT SUFFER FROM ANY ORGANIC DISEASE.

That appropriate muscular exercise is necessary for the healthy development of young people is a fact that is now generally recognized by those who have an insight to the laws of human development. The free play is the vital element of youth, but it does not render systematically arranged exercises superfluous in education. For it is only through these that the educator can ascertain that All-sided and harmonious development of the organs which should be the base for all sound education. Rational exercises give a stimulus to the unfolding process of the organism itself, and essentially contribute to counteract the tendency to disturbances of the bodily balance, caused by the exigencies and constraints of civilized life, especially school-life.

Unfortunately, schools have not, as yet, satisfactorily solved the problem of giving an appropriate share of physical education to their pupils. Even where something is done in the right direction, it is generally not quite sufficient for the purpose, as the time afforded seldom exceeds a few half-

hours of exercises in a week;* it is, therefore, but right that the home should supply the want.

The following prescriptions are meant for home use. One of the distinguishing features of the Swedish System of rational gymnastics is, that it has recourse to the resources of the human organism itself, and consequently is as much as possible independent of external objects. However, it is by no means averse to certain gymnastic appliances if judiciously employed. I would, for instance, recommend that there should be in every house two thick vertically hanging ropes firmly fixed to the ceiling or a door lintel, at two feet distance from each other, for all members of the family to perform on daily a hanging or trunk lifting exercise. The hands grasp the ropes at equal height above the head, and support, for a short moment, the whole weight of the body either by simply hanging with straight arms, or-if the person be sufficiently strong-by slowly bending the elbows, thus lifting the body, This trunklifting should be repeated 3-6 times, and, when the body is lowered at intervals between, this should be done slowly, with the toes always touching the ground before the heels, to avoid any nervous commotion. There ought also to be in each house a few appropriate implements for children and young people to perform some simple manual labor. This would afford them an occupation, both useful and pleasant, in their leisure hours.

PRESCRIPTION I

	I IUESCIUII IION	L.					
2 3 4 5 6 7		-	-	ays -		See	No. 1 23C 30 6, 7 31 18A, B 28B 25 26
	PRESCRIPTION	11.					
28 44 55 66 77 89 10 11	Standing Arm-Thrusting, forwards upwards Neck-Rest-Standing Alternate Knee-Lifting Wing-Forward-Lying Trunk-Holding Balance-Standing Leg-Movements Cross-Stride-Standing Jerk-Turning Standing Arm-Bending and Stretching, upward, wards Wing-Backwards-Lying Trunk-Holding Trunk-Lifting Standing Head-Bending, forwards and backwar cling Neck-Rest-Standing Alternate Toe- and Heel-Rai Stretch-Standing Side-Bending Standing Arm-Flinging outwards	ds, H	-	•.	- -	k- 6.	3 20 35 8, C, D 34 7, 8, 9 31 17 , 38, 39 18A, B 27A 10
	PRESCRIPTION II	I.					
23 4 5 6	Standing Arm-Thrusting, forwards, upwards Cross-Stride-Standing Jerk-Turning Wing-Standing Afformate Knee-Lifting Neck-Rest-Standing Trunk-Turning Wing-Standing Leg-Circling Standing Head-Circling, Turning, and Bending Pass-Positions, with Foot and Arm-Changing Stretch-Standing Trunk-Bending, forwards and b	-	- - vards	-		39, 38,	34 25 28B 24D 36, 37 40 33

 $^{^*\}mathrm{How}$ many schools are there in England, especially for girls, where systematic physical education is entirely neglected!

MOVEMENTS FOR INFANTS.

Systematic movements may be adopted for children at almost any age. The limbs of infants are capable of receiving so-called passive movements—movements given by another person,—and at the age of three or four years the child can have also passive-active ("duplicated") movements—movements where another person gives resistance or assistance during the movements. The mother, or any other tender and careful person (having previously acquainted herself with the movements) can perform this as well as any of the duties of child-nursing in general.

Some people may perhaps feel inclined to ask whether systematically arranged exercises are necessary to healthy children, who are of themselves inclined to move about as soon as they begin to walk or even to crawl. To be sure it is the happy instinct of nature that drives children (as well as the young of animals) to begin as soon as possible to perform movements, so beneficial to their healthy development, and which take their beginning from their sprawlings in the very first days of their existence. This instinct testifies decidedly to the necessity of bodily exercise even in the very earliest age. and surely it cannot be considered an undue encroachment upon nature to watch over and, in some measure, incite the movements; not more so than it is to guard and educate it in other respects. For it should be borne in mind that there are many things which tend to mislead the instinct in children. And it is not less important that THEY should have all-sided exercise than it is for people of more advanced age. The tender limbs of infants experience as wholesome and pleasant influence from such exercise as those of maturer persons, supposing, of course, that the movements be well adapted to the strength of the little ones.

Many ailments in children—such as gripes, costiveness, &c.—should be treated with passive movements; frictions of the abdomen, with stretched fingers, and kneading of the abdomen (the bent fingers of both hands pressing the abdomen from each side alternately). Gymnastics is a remedy which should be taken up in every-day life as one of the vital conditions for health.

PRESCRIPTION I.

1. Stretch-Standing Arm-Circling (Passive), 6-10 times.

Standing behind the child, one grasps its hands from the insides, and, having brought its arms in stretch-position (upwards), one makes them gently describe simultaneously a circling motion outwards.

- 2. Wing-Forward-Lying Trunk-Holding. (See No. 30.)
- (A child can easily perform this movement on a mattress or an ordinary sofa.)
 - 3. SRETCH-LYING LEG-SEPARATION AND CLOSING.

The child, lying on its back with the arms stretched above the head, should slowly move its stretched legs one to each side, and as slowly bring them back again close to each other. The assistant, having previously grasped the heels of the child, makes a gentle resistance to these motions.*

^{*}Well-proportioned resistance to a motion strengthens and modifies its effects.

4. Wing-Sitting Spiral-Turning.

The child is seated erect on a stool, hands on hip. The assistant stands in front, grasping its shoulders (one from before, the other from behind), and, slightly pressing with his knees those of the child, so as to keep them in their place during the motion, he moves the trunk of the child in a circle, first to one side, 5—8 times, then to the other as many times.

5. STRETCH-LYING LEG-BENDING AND STRETCHING.

The child lies on its back, with the arms stretched above the head; the assistant grasps its heels, and makes a slight resistance whilst the child bends its legs (drawing them up as much as possible), and again stretches them, and so on, 5—8 times.

6. Wing Lying Trunk-Raising 4-6 times.

The child, lying on its back, rises slowly to sitting posture, the assistant meanwhile facilitating the motion by pressing his hands on the knees of the child.

7. STRETCH-LYING ARM-BENDING AND STRETCHING.

The child, lying on its back, with the arms stretched above its head, bends the arms to the sides, and again stretches them 6—8 times. The assistant, having previously grasped the child's hands from the insides, makes a gentle resistance to these motions.

MOVEMENTS FOR ELDERLY PERSONS.

1.	Half-Stretch-Grasp-Standing Arm-Circling	g	-	-		No. 14
2	Wing-Stride-Standing Trunk-Circling			-	-	29
3	Sitting Foot-Circling	-	-	. •	-	19
4.	Wing-Standing Trunk-Bending, forward a	nd backwai	rd	-	-	26
5.	Half-Lying Leg-Bending and Stretching	-	-	-	-	22
6	Standing Shoulder-Circling -			-	-	4
7.	Neck-Rest-Standing Trunk-Turning -	-	-	-	-	28B
8.	Half-Stretch-Grasp-Standing Arm-Uircling	g -	-	-		14
9.	Standing Head-Bending, forwards and ba	ekwards, a	nd-Hee	d-Turnin	12	36, 38
10.	Standing Arm-Raising -	-'		-	•	1

It is a satisfactory and not a very uncommon thing to see an aged person enjoy bodily and mental health. Old age, however, is the stage of life where, in accordance with the laws of nature, a decrease in strength takes place. But it is one of man's precious duties to do all in his power to conserve his bodily and mental powers as long as possible in full vigour. One of the chief means for attaining this aim is bodily exercise. But the exercise should be stimulating and not fatiguing; they should invigorate the forces, and not exhaust them. Just as old people's food should be nourishing and easy to digest, so should the exercises never go beyond what is appropriate to their force.

MOVEMENTS AGAINST CONGESTION TO THE HEAD AND HEAD-ACHE.

PRESCRIPTION I.

	PRESCRIPTION 1.		
1.	Standing Arm-Raising		No. 1
2.	Sitting Foot-Circling		15
3.	Wing-Stride-Standing Trunk-Circling		29
4.	Standing Arm-Raising with Hand and Finger-Movement -	-	1, 12
5.	Neck-Rest-Standing Trunk-Turning -		2EB
	Cross-Standing Knee-Bending and Stretching -	-	. 23C
7.	Half-Stretch-Grasp-Standing Arm-Circling		14
8.	Standing Head-Bending, forwards and backwards, and Head-Circling	1	36, 39
9.	Wing-Standing Elbow-Moving backwards -		- 5
	Standing Head-Turning and Bending -	-	38B
11.	The same as 1.		

PRESCRIPTION II.

	I INDOCULE I ION IN			
	Half-Stretch-Grasp-Standing Arm-Bending and Stretching		-	No. 15
2.	Wing-Standing Alternate Toe- and Heel-Raising -	-		18
3.	Wing-Standing Trunk-Bending, forwards and backwards	-	-	26
4.	Half-Lying Leg-Bending and Stretching -	-		22
5.	Standing Head-Bending, Turning, and Circling -	-	36, 8	9 7, 3 8, 39
6.	Cross-Standing Arm-Rotation with Head- and Finger-Move	ments	-	11, 12
7.	Cross-Stride-Standing Jerk-Turning	-	-	34
	Lying Leg-Circling	-		21
9.	Stretch-Standing Side-Bending	-	-	- 27A
10.	Standing Arm-Raising	-	-	i

Weak persons should perform the movements with great moderation and only repeat them a few times. Stronger persons may perform them with more energy, and repeat them much oftener at each practice.

MOVEMENTS AGAINST NARROWNESS OF THE CHEST, ASTHMA, CONSUMPTION IN ITS EARLY STAGE.

PRESCRIPTION I.

1.	Standing Arm-Thrusting, forwards, upwards	-		-		-	No. 3
2	Cross-Standing Knee-Bending and Stretching		-		_		23C
3.	Neck-Rest-Standing Trunk -Turning	_		_		-	28B
٥.	Win Chanding Tunk Turning	_		7			2015
	Wing-Standing Elbow-Moving, backwards	7 01			-		15
	Half-Stretch-Grasp-Standing Arm-Bending and	d Stre	tching	-		-	15
6.	Cross-Stride-Standing Jerk-Turning		-				34
7.	Standing Alternate Toe- and Heel-Raising		-	-		-	18A
Š.	Neck-Rest-Standing Side-Bending -			_		-	27B
	Standing Arm-Flinging outwards -				_		17
ə.	Standing Arm-ringing outwards -		-			_	- :
	Standing Shoulder-Circling	-	-				4
11.	Standing Arm-Raising	-	-		-	-	1
	PRESCRIPTION	TT					
		LI.					
I.	Wing-Standing Elbow-Moving backwards -				-		5
2	Standing Arm-Thrusting, forwards upwards	-	-		-		- 3
<i>ي</i> .	Neck-Rest-Standing Trunk-Turning -		_				28B
9.	Treck-nest-standing frunk-furning					_	W W
4.	Standing Arm-Bending and Stretching upwards	sana	sidewise	•	-		0, 7
5.	Stretch-Standing Knee-Bending and Stretching		-	-		-	23 _C
6.	Stretch-Standing Side-Bending -	-	-		-		27A
7	Pass-Position		_	-		_	40
	Front-Lying Trunk-Raising				_		30
٥,	Front-Lying Trunk-Italising		_		_		
	Cross-Standing Arm-Flinging outwards	-	-	-		-	10
	Wing-Standing Trunk-Bending, forwards and b	ackw	ards		-	-	26
11.	Standing Arm-Raising	-		-		-	1

The second prescription is stronger than the first one, and should not be taken up till some practice in gymnastics and increase in strength have been gained through performing for some time the first prescription. the widening of the chest and strengthening of the respiratory organs in general that are brought about by these movements, the voice also acquires The above movements, therefore, may be recommended for more power. orators, singers, and stammering people.

MOVEMENTS AGAINST UNEVEN AND WEAK CIRCULATION OF THE BLOOD, AND

AGAINST HEART DISEASES IN THE EARLY STAGE.

PRESCRIPTION I. 1. Standing Shoulder-Circling 2. Sitting Foot-Circling No. 4 $1\overline{9}$ 3. Wing-Stride-Standing Trunk-Circling
4. Wing-Standing Alternate Toe and Heel-Raising 29 18A 5. Half-Stretch-Grasp-Standing Arm-Circling 6. Neck-Rest-Standing Trunk-Turning 28B 7. Standing Arm-Raising 8. Wing-Standing Trunk-Bending, forwards and backwards 9. Half-Lying Leg-Bending and Stretching 26 10. Left-Stretch-Grasp-Standing Heart-Percussion
 11 Wing-Standing Elbow-Moving, backwards

^{*} The left arm is stretched above the head, and kept in this position by the hand grasping some suitable support; the left side of the chest is slightly arched forwards, the right hand performs a tapping round the region of the heart (keeping the upper arm as quiet as possible). This movement has a calming effect on the action of the heart.

Neck-Rest-Standing Trunk-Turning Standing Arm-Bending and Stretching, unwards, sideways, and forwards	No. 18A 28B 6, 7, 8 27A 1
PRESCRIPTION II.	
CrossStrid -standing Jerk-Turning Wing-Backwands-Lying Trunk-Raising Wing-Backwands-Lying Trunk-Circling Wing-S ride-Standing Arm-Bending and Stretching Stretch-Vine-Francing Trunk-Bending forwards and backwards Wing-Standing Leg-Circling Necastles-Standing Side-Bending Standing Head-Bending and Circling.	- 15 - 34 - 31 - 25 - 29 - 16 - 33 - 24D - 27B 36, 37, 39
MOVEMENTS AGAINST HÆMORRHOIDS (PILES).	
Wing-Standing Trunk-bending, forwards and backwards C was an daug Knee-Bending and Stretching Wang-Stride-standing Trunk-Circling Wang-S anding Knee-Lafting Nee tes -Standing Trunk-Turning Stre en-tradieg Knee-Bending and Stretching Coss-Sorie tanding Jerk-Turning Wing- D k-Sanding L g-Stretching, forwards and Sideways NeeRest-standing Side-Bending Lying Leg-5. Eng	No. 26 23B 29 25 28B 23C 34 24A, B 27B 21 7, 8, 6
	PRESCRIPTION II. Half-Stretch-Grasp-Standing Arm-Bending and Stretching Cross-Strid -Standing Jerk-Turning Ving-Buckwards-Lying Trunk-Raising Wing-Standing Alternate Knee-Lifting Wing-Standing Afternate Knee-Lifting Wing-Standing Trunk-Gending Reach-Brasp-Standing Arm-Bending and Stretching Stretch-vine-tinding Trunk-Bending forwards and backwards Wing-Standing Leg-Circling Nees-tics-vinding Side-Bending Standing Head-Bending and Circling, Standing A m-Taising

This complaint (which manifests itself by swelling or bleeding of the veins at the lower part of the rectum) is generally of a secondary nature—I. E., depending on disturbances in the abdominal organs, or on diseases in the lungs or the heart; it is therefore necessary, especially in the latter cases, with due regard to the original complaint, to perform the movements with less vigour, and even exclude some of the more straining ones.

MOVEMENTS AGAINST INGUINAL HERNIA (RUPTURE).

It is a fact established by experience that appropriate movements can cure inguinal ruptures of recent date, and even those of longer standing, if not of any severer kind. The scientific explanation of this fact is that, by certain movements, the muscles that surround the rupture are strengthened and increased in bulk, so as to contract the passage of the rupture.

A truss is necessary to prevent the falling out of the hernia; but it has no active strengthening influence on the muscles as the movements have; consequently, it does not render these superfluous.

	Wing-Stride-Forward-Bend-Standing Arm-Raising* Cross-Stride-Standing Jerk-Turning		٠.	No.1	
	Balance-Standing Knee-Bending and Stretching	-		24A, B, C	į
4.	Wing-Backward-Lving Trunk-Raising -		-	31	
5.	Stret h-standing Knee-Bending and Stretching	-	-	23 B	
6.	Neck-Rest-Standing Trunk-Turning -		- 1	28B	
7.	Standing Arm-Thrusting, one arm up, the other down	-	-	. 13	,
8.	The same as 4.				
	B 4 B:ck-Support-Standing Leg-Bending and Stre	etching, i	forwards	24	
10.	and a Arm-Thrusting forwards upwards,	-		- 3	i

^{*} bent forwar professed in the chest arched. From this starting position the Arm-Raising is

performed 4 The back rests against a wall (or a door), the left knee is bent up and stretched forwards several times as described in 24; then the right leg performs the same motion as many times, and so on.

PRESCRIPTION II.

	Half-Stretch-Grasp-Standing Arm Circling	-		No.14
2.	Wing-Stride-Standing Trunk-Circling	-		- 29
	Standing Arm-Raising, sideways upwards,	with Rotation	n inwards s	nd
-	outwards	771011 100 000 0101		- 11,1
4	Cross-Standing Knee-Bending and Stretchin	~		- 230
3.	Cross-Standing Knee-Bending and Stretchin	8		
Đ	Wing-Standing Trunk-Bending, forwards an	1d backwards	•	, 26
	Neck-Rest-Standing Alternate Toe- and Hee	el-Raising -		- 18B
7.	Stretch-Standing Side-Bending -			27A
-8.	Half-Lying Log-Bending and Stretching			- 22
9	Standing Head-Turning and Circling -	<u>.</u>		38, 39
	Standing Arm-Raising -	_		- 00, 00
LU.	Standing Arm-tealing	•	_	- 1
	MOTERIAN MENDING MO D	DE TRATTA MITTE	TOWNER	
	MOVEMENTS TENDING TO R	ELIEVE THE	BOWELS.	
- 1.	Cross-Stride-Standing Jerk-Turning -			 No. 34
	Wing-Standing Leg-Stretching, backwards		-	240
~ ~ ·	Wing-Backwards-Lying Trunk-Raising			- 31
ુ.	Wing-Backwards-Lying Trunk-Italsing	•		
4.	Wing-Standing Alternate Knee-Lifting		• .	- 25
5.	Wing-Stride-Standing Trunk-Circling and T	'urning	-	- 29
6.	Lying Leg-Circling	•		- 21
7.	Neck-Rest-Standing Trunk-Circling		-	- 28B
	The same as 3.			
	Wing-Hook-Standing Leg-Stretching forwa	rds and hackw	anda	- 24A, C
30.	Stretch-Standing Side-Bending	LUS ALLU DECEN	alub =	
		-		- 27A
11.	Standing Arm-Thrusting, forwards upward	S =	•	- 3

The above movements, are useful against costiveness, have all of them some influence on the organs of digestion, though their influence is by no means limited to these. Persons in very different states of strength can perform these movements; but those in a weak state should, of course, perform them with less energy and frequency. In either case it would be advantageous to perform all or part of the movements in the prescription two or three times in the day. The here-mentioned complaint, like other chronic diseases, wants time for the cure to work out its effects.

MOVEMENTS AGAINST CHRONIC DIARRHOLA.

ACTIVITIES INCIDENCE OF STREET			
1. Wing-Stride-Forward-Bending-Sitting Screw-Rotation - 2. Sitting Foot-Circling 3. Wing-Stride-Standing Trunk-Circling	-	-	No. 35
4. Forward-Bending-Sitting Arm-Bending and stretching* 5. The same as 1.	-	-	6
6. Half-Lying Leg-Bending and Stretching 7. Stretch-Standing Trunk-Bending, forwards and backwards		-	- 22 - 33
8. Half-Stretch-Grasp-Standing Arm-Circling 9. Stretch-Step-Standing Side-Bending 4	-	-	14 27A
10. Standing Arm-Raising		-	1

MOVEMENTS AGAINST BAD DIGESTION (DYSPEPSIA), CHRONIC GASTRIC CATARRH, CARDIALGIA (HEART-BURN), COLIC (GRIPES).

These ailments of digestive organs are generally accompained by obstruction of the circulation of the blood in the abdominal organs (especially in the portal vein system), and also general nervous complaints, such as hypochondria (spleen), hysteria, &c. The following prescriptions are therefore calculated to relieve these complaints as well.

PRESCRIPTION I.

1. Standing Arm-Thrusting, Forwards upwards -		-	No. 3
2. Wing-Standing Trunk-Bending, forwards and backwards	-	-	26
3. Half-Lying Leg-Bending and Stretching -			22
4. Wing-Stride-Standing Trunk-Circling	•	-	29
5. Wing-Stride-Forward-Bend-Sitting Screw-Rotation -	-		- 35

^{*} Seated on a chair or sofa, with the trunk bent forwards in the hip-joints (to a slanting position), the bending and stretching should be performed as in No. 6.

† One foot standing on an elevation two feet high. The Side-Bending is performed to the side where the foot is raised.

Here may be repeated what is already said in the Introduction—that the prescriptions here given are not meant to render the advice of a physician superfluous, nor to fully supply the place of movements prescribed by an examined practitioner of the Swedish movement-cure. They are rather meant to induce people to seek advice in the first threatenings of a disease, and thus avert it, if possible.

APPENDIX C.

RULES AND REGULATIONS FOR THE GYMNASIUM.

- 1. No pupil shall do any exercise without his gymnastic belt and shoes.
- 2. Every pupil shall hang up his clothes during exercise, and his belt and shoes after exercise, in the places appointed for those purposes.
- 3. No pupil shall tie knots in the ropes, or displace in any way any portion of the apparatus.
- 4. No pupil shall attempt any exercise which has been forbidden, or shall do on one machine an exercise which properly belongs to another (such as jumping the vaulting horses, etc.).
- 5. No pupil shall attempt to use, or lift from the racks any bells, or bar, heavier than those which have been allotted to him by the instructor.
- 6. The bells and bars must be lifted from the rack and placed in position at the target at once, and not be rolled on the floor.
- No pupil shall fence, or play single-stick, without his mask, jacket, and glove, or thrust at another who is not so prepared.
- No pupil shall use or displace another's belt, shoes, arms, mask, &c.

TECHNICAL TERMS.

- THE STEP is the action, simple or compound, of which certain exercises, as climbing, are composed; every action throughout such exercises being but a repetition of the first step.
- THE POSITION is the attitude of body assumed previous to the initiatory step, and reassumed on the completion of every succeeding one.
- THE REACH is the point to which the hand is raised on the full upward extension of the arm,
- THE HALF-REACH is the point, opposite the face, to which the hand is raised when the fore-arm is bent nearly at a right angle with the upper arm.
- THE REST is the point, opposite the breast, to which the hand is raised or lowered when the arm is completely bent.
- THE DISTANCE is the space between the hands when they are placed at the width of the shoulders, as in vaulting.
- 'THE SPACE is the distance between any two regularly recurring points of a machine, as the rounds of a ladder.

YIELDING is the action of the body performed to avoid shock or concussion on dropping from a height, described at page 52.

THE LEADING hand, foot, or side, is the one which takes the lead in any exercise.

THE SUPPORTING hand, foot, or side, FOLLOWS the leading one.

THE REVERSED GRASP of the hand is when the palm is turned inwards, towards the face.

The thumbs and fingers are said to be TOGETHER when in grasping an object the thumb and forefinger do not separate: they are said to be MEETING when they partly or wholly encircle an object and meet, or nearly so, from opposite sides.

THE DUMB BELLS.

EXERCISE. No. 1.

ATTENTION.—Position of attention, the bells together on the target, the toes at the bells.

STEP TO THE REAR.—Make a full step to the rear with the left foot, the right following.

Fig. 1.



LEFT FOOT FORWARD.-Make a half face to the right, by turning on the heels, so that the left heel touches the inside of the right, and step to the front with the left foot, the left hand grasping the thigh just above the knee, as the foot comes to the ground, the right arm extended in the line of the right leg.

RIGHT HAND.—Seize the bell with the right

hand, the lower limbs remaining in position (Fig. 1). Up.—Raise the bell above the shoulder (bending the arm during the ascent)

Fig. 2.



to the full extension of the arm, leaning strongly on the left knee and pressing the breast to the front during the ascent of the bell; in this position the left leg to the knee, and the left arm should form one continuous line from foot to shoulder (Fig. 2).

Down.-Lower the bell, replace it on the target, and recover, bringing the left foot back to the right.

RIGHT FOOT FORWARD. -1. Face to the left, the right foot pointed straight to the front. 2. Step out with the right foot, as with the left foot forward.

LEFT HAND. - Seize the bell with the left hand, the lower limbs remaining in position.

Up.—As with the right hand.

Down.—As with the right hand.

EXERCISE. No. 11.

LEFT FOOT FORWARD. -As before.

BOTH HANDS.—Seize a bell in each hand, the arms passing on either side of the knee, the right on the right, and the left on the left side.

UP.—Raise the bells above the shoulders (bending the arms during the ascent) to the full extension of the arms, keeping the left knee bent, and pressing the breast to the front during the ascent of the bells (Fig. 3).

Down.—Bring the bells straight down by the sides, replace them on the target, and recover.

RIGHT FOOT FORWARD. -As before.

BOTH HANDS. -As before.

Up.-As before.

Down.-As before.

EXERCISE. No. III.

LEFT FOOT FORWARD.—As before.

RECOVERING. RIGHT HAND.—Seize the bell with the right hand.

Up.—Recover, and at the same time elevate the bell above the shoulder to the full extension of the arm (Fig. 4).

LEFT FOOT FORWARD.—Step to the front with the left foot, retaining the bell at the elevation above the shoulder, and pressing the breast to the front.

Down.-As before.

RIGHT FOOT FORWARD.—As before.

RECOVERING. LEFT HAND.—Seize the bell with the left hand.

Up.—As with the right hand.

RIGHT FOOT FORWARD.—As with the left foot forward.

Down.-As before.





Fig. 4.



EXERCISE. No. IV.

Fig. 5.

LEFT FOOT FORWARD.—As before.

RECOVERING. BOTH HANDS.—Seize the bells as in second Up.—Recover, and at the same time raise both bells above

the shoulders to the full extension of the arms (Fig. 5).

LEFT FOOT FORWARD.—As before, retaining the bells at the elevation.

Down.-As before.

RIGHT FOOT FORWARD.—As before.

RECOVERING. BOTH HANDS.—As before.

UP-As with the left foot forward.

RIGHT FOOT FORWARD.—As with the left foot forward.

Down.—As before.

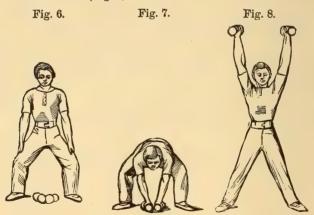
EXERCISE. No. V.

STEP TO THE FRONT.—As in first practice.

ASTRIDE. —As in first practice (Fig. 6).

UP AND DOWN. (SIX TIMES). READY.—As in first practice stoop from the waist, and seize the bells, one in each hand (Fig). 7.

UP.-The action and position of the ascent as in first practice, carrying the bells above the shoulders (Fig. 8).



Down.—Lower the bells, letting them swing to the rear between the legs, the instructor giving the word 'down,' the learners counting the numbers, the numbers to be counted in a clear and full tone, the sound to be prolonged over the time occupied in the ascent from the waist to the full extension of the arm.

HALT.—Replace the bells on the target, and resume the position of attention. STEP TO THE REAR.—As before.

EXERCISE. No. vi.

LEFT FOOT FORWARD.—As before.

RIGHT HAND. (SIX TIMES.) READY.—Seize the bell with the right hand, as in first exercise.

UP.—Repeat the first exercise six times, the instructor giving the word 'down,' the learners counting the numbers, as before directed.

HALT.—Replace the bell on the target and recover.

RIGHT FOOT FORWARD. -As before.

LEFT FOOT. (SIX TIMES.) READY.—Seize the bell with the left hand.

Up.—As with the left foot forward.

HALT.—As with the left foot forward.

EXERCISE. No. VII.

LEFT FOOT FORWARD.—As before.

BOTH HANDS. (SIX TIMES.) READY.—Seize the bells, one in each hand, as in second exercise.

Up.—Repeat the second exercise six times, the instructor giving the word 'down,' the learners counting the numbers.

HALT.—Replace the bells on the target and recover.

RIGHT FOOT FORWARD.—As before.

BOTH HANDS. (SIX TIMES.) READY.—As before.

Up.—As with the left foot forward.

Halt.—As before.

EXERCISE. No. VIII.

LEFT FOOT FORWARD, -As before

RECOVERING. (SIXTIMES.) RIGHT HAND.—Seize the bell with the right hand. Up.—Repeat the third exercise six times, recovering at each elevation of the bell, the instructor giving the word 'down,' the learners counting the numbers.

HALT.—Replace the bell on the target and recover.

RIGHT FOOT FORWARD. -As before.

RECOVERING. LEFT HAND.—Seize the bell with the left hand.

Up.—As with the left foot forward.

HALT.—As before.

EXERCISE. No. IX.

LEFT FOOT FORWARD. -As before.

RECOVERING. (SIX TIMES.) BOTH HANDS.—Seize the bells as in fourth exercise.

Up.—Repeat the fourth exercise six times, recovering at each elevation of the bells, the instructor giving the word 'down,' the learners counting the numbers.

HALT.—As before.

RIGHT FOOT FORWARD.—As before

RECOVERING. (SIX TIMES.) BOTH HANDS.—Seize the bells as with the left foot forward.

UP. -As with the left foot forward.

HALT .-- As before.

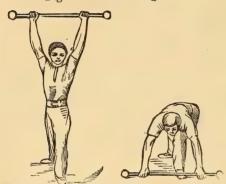
STEP TO THE FRONT.—As before.

Places.—Stoop from the waist and seize the bells, and place them in the racks.

THE BAR BELLS.

EXERCISE. No. 1.

ATTENTION.—As with the dumb bells, the bar along the centre of the target, Fig. 10. right and left. Fig. 9.



STEP TO THE REAR. -As with the dumb bells.

LEFT FOOT FORWARD. - AS with the dumb bells.

READY.-Seize the bar at the distance with both hands, the fingers over the bar, the thumb under, the lower limbs remaining in position (Fig. 9).

Up.—Raise the bar above the head (bending the arms during the ascent) to the full extension of the arms, pressing the breast to the front, with the head erect,

the eyes directed to the front, leaning strongly on the advanced leg, and the rear leg held straight and firmly braced back (Fig. 10).

Down.-Lower the bar with the arms bent, replace it on the floor and recover.

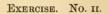


RIGHT FOOT FORWARD. -As before.

READY.—As with the left foot forward.

Up.—As with the left foot forward.

Down.-As before.



LEFT FOOT FORWARD.—As before.

RECOVERING. READY.—Seize the bars as in first exercise.

Up.—Recover, and at the same time elevate the bar above the head to the full extension of the arms (Fig. 11).

LEFT FOOT FORWARD.—Step to the front with the left foot, retaining the bar at the elevation above the shoulders, and pressing the breast.

Down.-As in first exercise.

RIGHT FOOT FORWARD.—As before.



RECOVERING. READY .-- As with the left foot forward. Up.--As with the left foot forward. RIGHT FOOT FORWARD.—As with the left foot forward. Down.--As before.

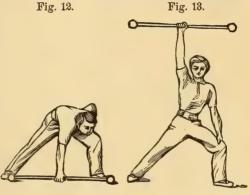
EXERCISE. No. III.

STEP TO THE RIGHT.—Make a half face to the right, and step to the right as with the dumb bells bringing the toes of the right foot, just within the bell the left following, the

heels touching each other. STEP TO THE LEFT .-- As with the dumb bells.

READY.--Seize the bar at the centre with the right hand (Fig. 12).

Up.-Raise the bar above the head and hold it in a horizontal line at the full extension of the arm (Fig. 13).



Down.-Lower the bar with the arm bent, and replace it on the ground, and replace the right arm in position, extended in the line of the right leg.

READY.—Seize the bar at the centre with the left hand.

Up.-As with the right hand.

Down.-As with the right hand, and come to the position of attention at the target.

FACE TO THE RIGHT.—Turn on the heels, facing to the right, reversing the position of both lower and upper limbs.

STEP TO THE REAR. -As before.

EXERCISE. No. IV.

LEFT FOOT FORWARD. -- As before.

READY.—Seize the bar as in first exercise.

Up.-As in first exercise.

ON THE SHOULDERS. (SIX TIMES.)-Lower the bar by the rear until it descends upon the shoulders, pressing the breast to the front, and leaning strongly on the left knee (Fig. 14).

Up.—Elevate the bar to the extension of the arms: the instructor giving the word 'up,' the learners counting the numbers.

Down.-Lower the bar by the front at the full extension of the arms, replace it on the ground, and recover.



RIGHT FOOT FORWARD.—As before.

READY.—As with the left foot forward.

Up.-As in first exercise.

ON THE SHOULDERS. (SIX TIMES.)—As with the left foot forward

Up.—As with the left foot forward.

Down.-As before.

Fig. 15.

EXERCISE. No. v.

LEFT FOOT FORWARD.—As before.

HANDS REVERSED.—Extend the arms to the front, turning the palms of the hands upwards (Fig. 15).

READY.—Seize the bar at the distance, the palms of the hands under the bar.

Up.—Raise the bar above and slightly in front of the head, to the full extension of the arms.

ON THE BREAST. (SIX TIMES.)—Lower the bar by the front until it descends upon the breast, pressing the breast to the front, and leaning strongly on the left knee, the head slightly held back, the eyes directed to the front (Fig. 16).

Up.—Elevate the bar to the extension of the arms; the instructor giving the word 'up,' the learners counting the numbers.

Down.—As in fourth exercise.

RIGHT FOOT FORWARD.—As before.

HANDS REVERSED.—As before.

READY.—As with the left foot forward.

Up.—As with the left foot forward.

ON THE BREAST. (SIX TIMES.) UP.—As with the left foot forward.

Down.-As before.

EXERCISE. No. VI.

LEFT FOOT FORWARD.—As before.

UP AND DOWN. (SIX TIMES.) READY.—Seize the bar as in first exercise.

Up.—Repeat the first exercise six times, the instructor giving the word 'down,' the learners counting the numbers.

HALT.—Replace the bar on the ground, and recover.

RIGHT FOOT FORWARD .-- As before,

UP AND DOWN. (SIX TIMES.) READY.—As with the left foot forward.

Up.—As with the left foot forward.

HALT .-- As before.

EXERCISE. No. VII.

LEFT FOOT FORWARD.—As before.

RECOVERING. (SIX TIMES.) READY.—As in first exercise.

UP.--Repeat the second exercise six times, the instructor giving the word 'down,' the learners counting the numbers.



HALT.—Replace the bar on the ground, and recover.

RIGHT FOOT FORWARD.—As before.

RECOVERING. (SIX TIMES.) READY.—As with the left foot forward.

UP.--As with the left foot forward.

HALT.—As before.

STEP TO THE FRONT. -As before.

PLACES.—Stoop from the waist and seize the bar, and place it in the racks.

WALKING.*

In walking the whole column of the body is slightly inclined to the front; the lower limbs are lightly lifted upward and forward, with every extensor muscle relaxed, and every joint mobile and free, and with a slight lateral oscillation of the body, marking the advance and rest of the foot, right and left, which is perceptible in the jostle and separation of two men walking at close order without keeping step. The foot is not placed flat, or all at once upon the ground—indeed in rapid walking the whole of the foot is never on the ground at the same time. The heel first meets the ground, and the contact gradually extends from it to the toes, the heel being lifted by the time this act is accomplished. The arms are allowed to swing to front and rear in alternated action with the lower limbs.†

the must be premised that it is difficult, if not impossible, to lay down laws and rules to be observed by all in the performance of these three modes of progression, or, as they may be termed, natural exercises—walking, running, and leaping. It is found that many men, from organization or habit, have a mannerism, i. e., a special mode of gait, action, or preserving position, which although an error on general grounds, has, from such special causes, become serviceable to them, and which to alter would often be to reduce not to add to their power. Where such distinctive mannerism exists the aim should rather be to cultivate the natural capacities in this particular style of exe cution to its highest point, always admitting that the mannerism would not disqualify the effort in comparative trials.

^{*}A clear distinction must, at the outset, be drawn between walking and marching, as taught in military drill. The latter must ever be regarded as a military exercise, in which the soldier, for professional considerations, is taught to preserve an attitude more or less formal and constrained; the former has but one object, viz., facility of progression, and every point of position and action is made subservient to this end. Military drill, however, from the very circumstance of its being an exercise in which the action and position of the different parts of the body, during locomotion, are systematized and prearranged, is most valuable to the young and growing, and should be regularly taught in schools. It is admitted that, as a rule, boys dislike drill, but this I am sure is in a great measure owing to the monotonous manner in which it is taught and the want of tact and discrimination frequently shown by the instructor. Boys, and especially little boys, usually have it not only too frequently and too much of it at a time, but they are kept at the commencement too long, at the least attractive, although very important, parts of it; i. e., the balance steps, facings, and slow time. I find it is better to pass over these quickly, and to take up the more palatable quick step, stepping short, stepping out, forming fours, &c.; and at short intervals to return to pick up a little of what was prematurely passed. The drill never exceeds half an hour, once or twice a week, and in fine weather only.

The remarkable mechanism of the human foot itself emphatically teaches the manner of its use. The heel, which first comes in contact with the ground and receives the whole superimposed weight, is composed of a single solid bone, capped with the most powerful tendon in the body, and with a cutaneous covering many times thicker than is to be found on any other part of the body, the whole presenting a smooth and rounded surface, firm but elastic, yielding to strong pressure, but instantly recovering its rounded form on the pressure being removed. Immediately in front of the heel springs the arch of the instep, over which the burden of the body is transferred to the front of the foot. Here the structure changes entirely to meet the change in the duty to be performed; there is no shock to be encountered, so the strong single bone of the heel, overlaid with firm muscle and thick cuticle, gives place to a different mode of construction,—to many bones of different sizes, also protected with muscles and ligaments and cuticle, but softer and more sensitive, spread upon a broader surface, and with many prominences and indentations to take advantage of every inequality of ground; for the requirement here, on the poise of the body, is stability rather than strength; and to complete this security the whole line of the front edge of the foot is divided into five separate parts (toes) of different lengths, dimensions, and degrees of strength, allowing each separate part, while acting in concert with all the others, to take its individual grasp of the ground according to the nature of the surface on which it rests. This terminating act in the compound movement composing the step is so important that a large portion of the leg also is fashioned and placed to aid in its performance; the mass of muscle forming the calf of the leg has for its primary object to raise or lift the heel, while the toes have yet the ground for fulcrum, anticipatory of the forward act of propulsion of the next step; and it is this gradual, springy action, which at once gives development to the limb, and in return receives from the limb elasticity and spring in proportion to its development.

The initiatory practice in walking should be performed quite irrespective of time, correct action and position being the sole points to be aimed at; these acquired, the longer courses should be used.

The action and position in walking are the same for all degrees of speed, except that as the speed is increased all the features of the position become more distinct and prominent, and all the points of the action are intensified; the step will be wider, yet never so wide as to cause additional effort; a stronger act of propulsion will come from the rear foot, a more distinct transition from heel to toe will take place on the advanced one; and the natural oscillation of the upper limbs to front and rear, alternating with the action of the lower ones, will become more energetic and in a great measure regulated by the muscular contraction of the limbs themselves.

SLOW TIME. SHORT DISTANCE.

Exercise 1. Advance the left foot a free step, at the same time incline the column of the body to the front;

the head, neck, trunk, and right leg forming a line slightly slanting from rear to front; the right heel raised from the ground, the lower limbs supple, the left knee bent, the right nearly straight; the arms hanging naturally by the sides, the palms open, but not spread, and turned inwards towards the thighs, but not touching them; the fingers together but not extended; the whole column of the body unconstrained; the head and neck perfectly free (Fig. 1.)

Press lightly from the right foot, quit the ground and let the limb swing to the front, the body retaining its forward inclination. When the right foot has swung to the front the length of the step, softly place it on the ground, the heel first, the toes last, and as these descend raise the heel of the left, now relieved of the weight of the body, which will have been transferred to the right. Repeat.



Fig. 1.

After the slow time, in order to acquire correct action and position, walking should be practiced as follows:—

Exercise 2, Course II.	At half speed	_Short	distance
Exercise 3. Course III.	At speed	Short	distance.
Exercise 4. Course IV.	At speed	Long	distance.

RUNNING.

The exercise of running is, in both action and position, different from that of walking. In the former there is but one foot on the ground at a time, and immediately after the completion of each step both feet are removed from the ground. There is no gradual descent and rise, no marked transfer of superimposed weight, no distinct point of change of the centre of gravity. At first, and before the full rate of speed is attained, the body is inclined to the front as in walking, but the speed being attained, and the proper momentum acquired, the column of the body is involuntarily brought towards the vertical line by the rapid and sustained advance of the lower limbs. In walking, progression is accomplished by a succession of separate steps, each step beginning only on the termination of the preceding one, each successive step requiring a re-adjustment of equilibrium, and a distinct renewal of propulsive effort. Running is more like a succession of leaps, every bound possessing part of the forward momentum of its predecessor, this momentum being sustained or augmented by the energy of the flexions and extensions of the lower limbs.

With a man unaccustomed to running, I would say, let him begin with a mile; setting himself to cover the distance in about eight or nine minutes, at the easiest pace and make-believe race he can run in. Let him break from his walk to the ground into this easy trot, and practise it until he find his wind decidedly improved, and the work, such as it is, pleasurable. He may then do one of two things—either increase the distance by another half mile, to be run at the same pace, or hold to the first course and cover the distance in one or two minutes less. When the mile can be run in six minutes as easily as it was run in eight, let the tactics be changed; let him break the uniformity of the run, and cultivate variety of pace; let him begin the race, as at first, at an easy trot; keep at it for a quarter of the distance to allow the organs of respiration and circulation to take up gradually the accelerated action which is demanded of them as soon as the trotting begins, allowing also the muscles employed in locomotion to take up THEIR accelerated action when the walking is relinquished; let the second quarter be done in the same style but at a somewhat quickened pace, still keeping within the margin of easy performance; and let the third, if the preceding causes no distress, be quicker still, gradually culminating towards its close to an effort at the utmost strain of the powers; and last, let it subside in the fourth quarter gradually into the first easy trot, ending in the effortless walk, to allow the throb of the heart and swell of the arteries and veins to subside and settle down, and the lungs to resume their peaceful tidal motion, and the air current in their cells its rythmical ebb and flow.

In training for the performance of some difficult pedestrian feat, the exercise should be begun and conducted with the greater method and care, and all its separate features should be studied, and every other exercise enlisted in its service which can be brought to bear upon the parts of the body employed; both as aids to local muscular power by developing the voluntary muscles directly engaged in locomotion, and the involuntary muscles and all parts of the frame engaged in respiration.

In running, as in walking, there are three points to be specially observed,—

1st. The length of stride.

2nd. The rapidity of step.

3rd. The endurance; or that stamina which enables a man to continue the exertion, and repeat indefinitely the step without reduction of its other two

qualities-of rapidity and length.

For the first quality length of limb is undoubtedly the chief requisite, and may be said therefore rather to be inherited, when possessed, than acquired: although not entirely, as the freedom and fullness of the stride may be facilitated by promoting the mobility of the joints connecting the lower limbs with the trunk, and it is greatly owing to the neglect of this point when we see men, as we often do, stepping under their stride; and the habit of stepping short once acquired, it is very difficult to relinquish it without encroaching on the second quality, rapidity. Length of stride is, however so very valuable, that no care and no labor should be spared in cultivating it. If but one inch in the step be gained, without trenching on its velocity, it will give fifty yards in the mile.

For the second quality, RAPIDITY, there is still something due to possession by inheritance, though undoubtedly more is left to culture; some men in addition to great mobility of joint and extreme rapidity of muscular contraction, show an aptitude for these exercises of progression and a facility of execution of the movements required which no care and no culture of itself can ever give; and this too without any apparent cause from shape or size of limb. They also show a kind of instinctive liking for these exercises, quite inexplicable, and are drawn in the direction of their practice quite involuntarily and irresistably. Others again with unwearied efforts never exceed mediocrity.*

The third quality, ENDURANCE, when it is one of physical stamina, is less due to condition of limb than general power of body; when of respiratory power it is of course due to the condition of the respiratory organs, and the

conformation and size of the chest.

This quality of endurance is more susceptible of improvement by judicious culture than either of the other two, whether the line of culture be in the direction of muscular or respiratory power; its limit not being fixed absolutely, like the first quality, nor partially, like the second.

Training exercise for feats of pedestrianism involves much care and unwearied and unceasing application. The fundamental principal with this, as with all other exercises, is first to ascertain practically at the commencement of the training the actual capacity of the body at the special mode of exertion required, and then gradually, day by day, and week by week, to observe the parts of the body which feel the exertion most, that they may be assisted and strengthened by other exercises; for the sameness of the movements and modes of action in one exercise will fatigue, when another mode of employ ment will stimulate to renewed effort and give increased vigor.

If speed for a short distance be the object desired, this pace should be slowly and gradually approached until it can be sustained over a portion of the course, and then, stride by stride, extended until the whole course can be covered within the time desired. If it be wished still to lessen the time, the whole attention should be given to the quickening of the step-it being assumed that the full length of stride has been already acquired. Indeed neither rapidity nor duration should be seriously attempted until this quality has been cultivated and its extent determined. If the speed be satisfactory but not the distance, I consider it the better method first to note the distance that can be done at the pace desired, and then daily, if only stride by stride, extend it, rather than to cover a greater distance with a general reduction of speed; inasmuch as I consider it to be less difficult to extend a course at a pace already acquired than to increase the speed over a longer course, which can only now be covered at a slower pace. But regulations of this kind must give way when they clash with preconceived impressions or opinions, for in all such matters there is an individual suitableness to be consulted, and strong fancies and prejudices have much readiness to establish themselves as facts.

^{*}I have, in my own practice, proved that endurance and velocity are essentially different qualities, and that a man may have one in fair degree without the other. I have never been able to exceed six miles in the hour, although I have frequently walked sixty with and without knapsack, without experiencing extreme fatigue, or unfitness for the road next day.

To run a short distance, such as a hundred yards race, rapidity of step is probably the first quality; as the distance increases, as in the quarter or half-mile races, length of stride is probably of the greatest importance, or at least of equal importance with rapidity; and when the race is what is distinctly recognized as a long course, such as the mile or more, or combining distance with obstacles, such as the steeple-chase, then endurance takes the most prominent place and passes probably from muscular to respiratory effort.

A correct action and position, quite irrespective of time, should first be obtained; these should then be practiced at half speed, and ultimately at the

highest rate of speed.

When in addition to the proper action and position, the proper and uniform rate of speed has been acquired, the race may be extended to the quarter and whole mile.

Long distances, such as five or ten miles, may also be practiced, with emulation, but systematically, and above all progressively, both as regards distance and speed. There is much art in husbanding and profitably spending the physical resources in both modes of progression, and there is no exercise in which men can be engaged where fatigue so soon and so distressingly supervenes, if unskillfully performed.

SLOW TIME. SHORT DISTANCE.

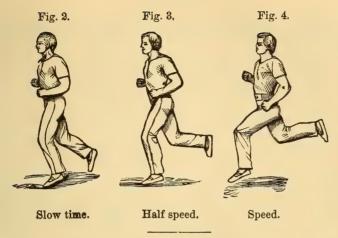
Fig. 1.

Exercise 1. The position the same as in walk-Course I. ing, except that the arms are bent at the elbows; the fore-arm held in a horizontal line, the hands to the front and closed, the thumbs inwards. (Fig. 1).

The step also the same as in walking, except that the left foot is lifted before the right reaches the ground; the knees are more bent than in walking, the foot is lifted farther from the ground, and the column of the body pressed more strongly to the front.

After the slow time, in order to acquire correct action and position, running should be practiced as follows:—

The action and position are the same in all rates of speed, except that as the pace increases the step is wider and the foot lifted higher on quitting the ground.



LEAPING.

RUNNING has been characterized as a succession of leaps, because, as In the leap, both feet are at each step, for a space, removed from the ground; and for the same reason, and in a similar sense, the leap may be viewed as a modified step, because when preceded by the run, it forms but the terminating step in the course; the whole momentum acquired by the preliminary run being here employed in a final effort, either on the plane of the course itself, or on one more or less vertical to it.

The simplest form of leaping is the STANDING leap, which embraces a very extended series of exercises, all more or less valuable in preparing and strengthening the lower limbs for the more arduous modes of leaping, and for enabling the leaper to bring the upper limbs and the trunk itself to aid and assist in the effort. Of these the simple upward spring is the first; it is accomplished by the flexions and extensions of the trunk and lower limbs combined, the first act being to depress the trunk upon the thighs, pressing the hips to the rear and the knees prominently to the front, while by the same act the heels are raised from the ground, and the whole weight of the body is brought upon the fore part of the foot. At the same time, and in unison with this combined action, the upper limbs are brought down to their full extent. This is as it were the bending of the bow, the compression of the spring. The next act is to set it free, and this is done suddenly and at once. The powerful extensor muscles forming the greater portion of the thigh and lower part of the trunk, straighten by one act every joint, the feet spurn the ground, and the upper limbs are forcibly elevated.

This is the leap, and its height will be in relation to the force of the reaction from the preliminary depression.

The FORWARD, REARWARD, and SIDEWARD leaps are but special modes of employing the same force, obtained by similar if not identical means. The action and position of the upper limbs in these special modes of leaping, how-

ever, are not solely for augmentation of force, but also for the preservation of the equilibrium of the body, and for the protection from injury when this has been lost.

There is scarcely any exercise in which men improve so rapidly and to so great an extent as in the various modes of leaping, and there is scarcely any exercise which so powerfully contributes to the development of the lower limbs. The action is precisely that which the nature of the muscles themselves demands for their healthful growth and full development, namely, rapid contraction and expansion, with progressive and accumulative effort; while the power of concentrating the energies, of governing the action of the limbs, and of alighting on the spot and in the position desired, becomes, by practice of these various forms of leaping, completely under control.

The instructor must be careful to confine the learner to the simpler modes of leaping until he has acquired the power of making the limbs and trunk act harmoniously together, and of preserving the equilibrium of the body in every situation and position. When practising leaping DEPTH, the initiatory practice should be at a very slight depth, gradually increasing, but never under any circumstances should it be increased, or its difficulty otherwise augmented, until the action and position is correct. In leaping HEIGHT the learner must never be allowed to leap at a stiff barrier; it in no way tests the power of the leaper better than a fragile one, or affords greater advantages in the practice, and there is no merit in doing anything dangerous when there is no equivalent to be gained for the risk undergone. Rails should be attempted only by well-trained and experienced leapers, for a slip of the foot may and does often happen with the best leapers, and such a mishap ought never to entail serious injury. In leaping WIDTH, over a dry ditch, for practice, the ditch should be shallow, and the sand or saw dust at the bottom should be frequently stirred or softened. It is part of the instructor's duty to see that the banks are firm and equal before his class begins its practice.

Every form of leap terminates in a position of body similar to that taken up in the preliminary movements of the first leap, namely, in the depression of the trunk upon the limbs, and the bending of the joints. This is done, strictly speaking, neither before nor after the descent is made, but, as it were in detail, as the different parts of the body successively arrive; the feet first with the heels raised; the lower limbs next, with the knees bent; the trunk following, pressing the hips to the rear; the whole YIELDING to the encounter with the resisting ground, and thus dispensing the shock or concussion.

The barrier for leaping on should be so constructed that it may be raised or lowered at pleasure, the top of it affording a firm resting-place for the feet. The barrier for leaping over should be formed of two standards about 6 feet high, fixed 5 or 6 feet apart. Between these a strong string, with a small flag in the centre, should be strained,* looped round one of the posts, and lightly fastened to small iron pins, fixed a distance of one inch apart, up the back of the other. The heights from the floor should be marked in inches up each of the posts. The machine for leaping DEPTH should be a small wooden plat-

 $[\]mbox{{\for learners}}$ and in non-competitive efforts, is preferable to the stick in common use.

form supported on iron brackets made to clip over the rounds of a ladder, vertical or inclined, the platform being raised or lowered the distance apart of the rounds, as required, and the ladder giving means of access to it.

FIRST SERIES.....Standing.
SECOND SERIES....Running.

TO LEAP HEIGHT, IN TWO MOVEMENTS.

FIRST SERIES,
EXERCISE 1. Position of attention, the toes a short distance from the barrier (according to its height).

- 1. Bring the arms upwards and forwards to their full extension above the head, the hands closed, again bring them downward to the full extension, at the same time bending the knees until they jut over and beyond the toes, raising the heels and bringing the weight of the body and downward pressure on the fore part of the foot; repeat this movement three times, and after the third depression, spring from the feet, rising above and alighting on the barrier, resting on the fore part of the foot, the knees bent low and jutting over and beyond the toes, the trunk of the body held low and compact, and bring the arms close in by the sides (Fig. 1).
- 2. Spring to the ground, preserving this position of body and extending the arms to the front.

Fig. 1.

TO LEAP HEIGHT, IN ONE MOVEMENT.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise to the COURSE I spring, except that the act of propulsion of the feet should be more directed to the front.

2. Clear the barrier (Fig. 2), and descend yielding.

TO LEAP HEIGHT, ONE MOVEMENT, THE LEFT SIDE LEANING.

FIRST SERIES. Position of attention, the barrier in profile on the left, the COURSE I. distance as in first exercise.

1. Repeat the preliminary movements, as in first





exercise, giving the arms a lateral inclination (towards the barrier) on their elevation.

2. Spring from the feet in the same direction, clearing the barrier (Fig. 3.), and descend yielding, (the barrier on the right).

This exercise to be repeated with the right side

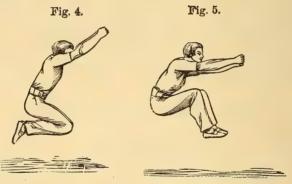
leading.

TO LEAP WIDTH.

FIRST SERIES. Position of attention, the toes at the edge of the mark.

Course I. 1. Bring the arms slowly upward and forward to the line of the shoulder, the hands closed (Fig. 4.); bring them again downward and rearward to their full extension, at the same time depressing the lower limbs as in first exercise; repeat these movements three times.

2. Spring from the feet with the entire force of propulsion of the lower limbs and at the same instant throw the upper limbs to the front (Fig. 5.); descend yielding, but let the entire sole of the foot meet the ground.



TO LEAP HEIGHT AND WIDTH COMBINED.

FIRST SERIES. Position as in first exercise.

Exercise 5.

1. As in first exercise.

Course I. 2. Spring from the feet, as in first exercise, clear the

barrier and the space beyond; descend yielding.

If the barrier be the first part of the obstacle, throw the arms and incline the body to the front, on clearing it; if the second part, bend the back inwards on clearing it, and throw the hands to the extention of the arms, to the front upwards; descend yielding.

TO LEAP WIDTH, TO THE REAR.

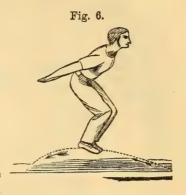
FIRST SERIES.
Exercise 6.
Course II.

Position of attention, the heels at the edge of the mark.

1. The preliminary movements as in first exercise, except that the downward extension of the arms should be carried farther to the rear.

2. Spring from the feet, throwing the arms energetically to the rear (Fig. 6), the hands open, the palms upwards; descend yielding.

As soon as the feet meet the ground, bring the hands down by the sides, the palms downwards and to the front.



TO LEAP WIDTH, SIDEWAYS.

FIRST SERIES.
Exercise 7.

Position of attention, the mark in profile on the right, the edge of the right foot touching it.

COURSE II.

1. Slightly bend the knees, letting them jut over, but not beyond the toes; swing the arms upwards and across the body in front; on the return of the third swing or oscillation to the left, bend the knees steadily downward, the right lower than the left, raising the heels and resting on the fore part of the feet.

Fig. 7.

2. As the hands attain the culminating point, throw them rapidly and energetically to the right; at the same time spring from the feet with their entire concentrated force of propulsion (Fig. 7), and descend yielding.

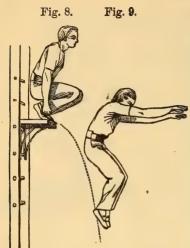
This exercise to be repeated on the left.



TO LEAP DEPTH.

FIRST SERIES. Exercise 8. Course II. Position of attention, the toes at the edge of the platform or ditch.

1. Bend the knees until they jut over the toes, and



above the space, raising the heels, and resting on the fore part of the foot: during the depression of the lower limbs extend the arms by the sides, the hands lightly closed, the column of the body inclined to the front, but held close and compact (Fig. 8).

2. Press lightly from the feet, and spring to the front with sufficient force only to bring the back clear of the edge of the platform or ditch, extend the arms to the front (Fig. 9), and descend yielding.

TO LEAP DEPTH, TO THE REAR.

FIRST SERIES. Exercise 9. COURSE III. form or ditch.

Position of attention, the heels at the edge of the plat-



The preliminary movement as in sixth exercise.

2. Spring lightly to the rear, throwing the hands forwards to the full extension of the arms (Fig. 10), and descend vielding.

If the equilibrium be lost, and the body fall to the front, extend the arms as in preceding exercise; if to the rear, as in sixth exercise, Fig. 3.

TO LEAP WIDTH AND DEPTH COMBINED, TO THE FRONT.

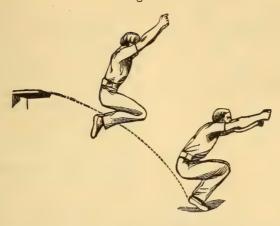
Position of attention, the toes at the edge of the plat-FIRST SERIES. form or ditch. Exercise 10.

COURSE III. 1. (Look steadily at the spot desired to be reached.)

The preliminary movements as in eighth exercise.

2. Spring from the feet, and at the same instant throw the hands upward and forwards (Fig. 11), clear the space, and descend yielding (Fig. 12).

Fig. 12.



TO LEAP WIDTH AND DEPTH COMBINED, TO THE REAR.

FIRST SERIES. Exercise ff, COURSE IV. sixth exercise.

Position as in ninth exercise.

1. (Glance to the rear and determine on the spot to be reached in the leap.) The preliminary movements as in

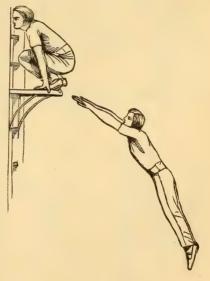
Fig. 13. Fig. 14.

2. Spring from the feet, at the same time throw the hands to the rear, open, with the palms downwards, and descend vielding.

A SECOND METHOD.

FIRST SERIES. Position as in Exercise 12. ninth exercise. COURSE IV. 1. Stoop down and grasp the ledge of the platform with both hands, the fingers and thumbs meeting, the fingers above (Fig. 13); if at the edge of a ditch, the fingers and thumbs together, the palms on its surface.

2. Spring from the feet, shooting them out to the rear, and at the same instant press strongly from the hands (Fig. 14); retain them in the front, the palms open, and descend yielding.







TO LEAP WIDTH AND DEPTH COMBINED, SIDEWAYS.

FIRST SERIES. Position of atten-Exercise 13. tion, the ditch or COURSE IV. front edge of platform in profile on the right.

- 1. The preliminary movements as in seventh exercise.
- 2. Spring from the feet, throwing the hands to the left front (Fig. 15), descend yielding.

This exercise to be repeated, the right side leading.

TO LEAP HEIGHT, TWO MOVEMENTS.

Fig. 16.

Second Series. Exercise 14. Position of attention, twenty or thirty

paces from the barrier.

COURSE I. 1. Begin the preliminary run, with short, well-measured steps, quickening the pace on the advance, and when within a few feet of the barrier (according to its height), spring from the foot making the last step, bring both knees close up in front, the hands being elevated at the instant of the spring as in first exercise, and alight upon the barrier, bringing the hands instantly down by the sides (Fig. 16).

2. Descend as in first exercise.

TO LEAP HEIGHT, ONE MOVEMENT.

SECOND SERIES.

Exercise 15.

COURSE I.

Position as in fourteenth exercise.

1. As in preceding exercise to the spring, clear the barrier (Fig. 17), and descend yielding.





TO LEAP HEIGHT, ONE MOVEMENT, THE LEFT SIDE LEADING.

SECOND SERIES. Position as in fourteenth exercise 16.

Course I.

1. The preliminary run as in fourteenth exercise; swerve slightly to the left in the last few steps, inclining the left shoulder forward, spring from the left foot, clear the barrier (Fig. 18), the left foot leading to the ground, and descend yielding, the barrier on the right.

This exercise to be repeated with the right side leading.

TO LEAP WIDTH.

SECOND SERIES. Position as in fourteenth exercise. Exercise 17. 1. The preliminary run as in Course I. fourteenth exercise, spring from the foot making the last step, the whole act of propulsion of the spring and the momentum acquired in the run being directed to the front, the lower limbs closely bent up, the trunk of the body compact and firm, the hands closed and thrown to the front, as in Fig. 4; descend yielding, resting on the entire sole of the foot.

TO LEAP HEIGHT AND WIDTH COMBINED.

Second Series. Position as in fourteenth exercise.

Exercise 18. 1. The preliminary run as in Course III. fourteenth exercise: the spring as

in fourteenth exercise; the effort should be to divide the momentum of the run and that given by the propulsion of the spring, so that the obstacle in both aspects, height and width, shall be cleared; descend yielding.



THE LEAPING ROPE.

The exercises with the leaping rope, and also those with the leaping pole, differ in certain features from all other modes of leaping; they employ a machine to aid the leaper in clearing the barrier, and they give employment to both the upper and the lower limbs, thus forming the connecting link between leaping and vaulting. The practice of these exercises is very good in an elementary sense, giving much action in a beneficial form to the trunk as well as to the limbs.

This machine is a strong rope suspended from a tie-beam or other point of attachment, over the center of the string and posts already described for leaping height. It should reach within four feet of the ground,

SINGLE SERIES.

TO LEAP HEIGHT.

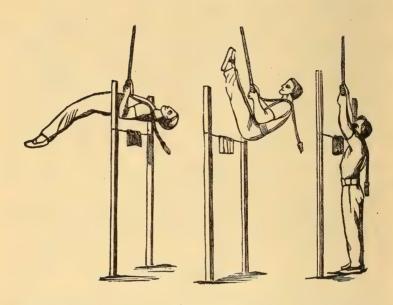
Single Series. Position of attention in front of the barrier.

Exercise 1. 1. Raise both hands to the reach and grasp the rope, Course I. passing the end of it over the shoulder (Fig. 1); spring from the feet (slightly to the rear), bringing the lower limbs straight up in front of the face, letting the head and shoulders incline to the rear (Fig. 2); clear the barrier, bending the back inwards, and shooting the feet to the front; the legs straight and together (Fig. 3); bring the head and shoulders to the front, quit the grasp of the hands, and descend yielding.



Fig. 2.

Fig. 1.



HAND OVER HAND.

SINGLE SERIES. Position as in first exercise.

Exercise 2. Raise the right hand to the reach, spring from the feet COURSE II. and bring the lower limbs up in front as in first exercise; during their rise, pass the left hand over the right, and again the right over the left, clear the barrier as in first exercise, and descend yielding.

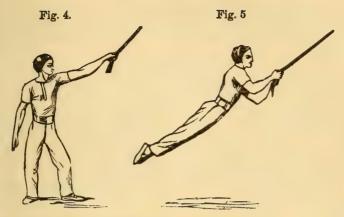
This method to be used when the barrier is too high to be cleared as directed

in first exercise.

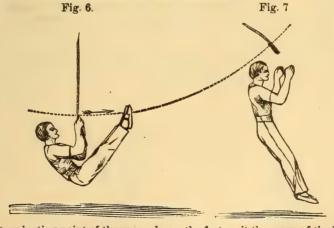
TO LEAP WIDTH.

SINGLE SERIES. Grasp the end of the rope with the left hand and step to the rear until the arm is at the reach, make a half face Course I. to the right, and take a short step to the front with the left foot, the knees slightly bent, the right arm extended by the side, the palm open, and to the front, the fingers pointed to the ground (Fig. 4.)

1. Lift the left foot from the ground, throwing the weight of the body to the rear, press strongly from the right foot, spring from the ground back-



wards, rapidly placing the feet together and swinging them to their furthest rearward point, the legs straight and together, the toes pointed, at the same time turning the body to the front, the arms bent at the half-reach, the head bent back (Fig. 5); begin the forward swing, bringing the lower limbs to the front and letting them rise as high as the hands (Fig. 6); when approaching



the terminating point of the swing, lower the feet, quit the grasp of the hands, incline the head and shoulders to the front (Fig. 7), and descend yielding.

THE DOUBLE SWING.

SINGLE SERIES. Position as in third exercise.

Exercise 4. 1. As in third exercise to the terminating point of the Course III. forward swing; instead of quitting the grasp, advance the right shoulder, wheel round, bringing the back upwards, throw the lower limbs high and free to the rear (thereby greatly increasing the momentum).

begin the return swing, bringing the feet to the front as in the first swing; at its culminating point, advance the left shoulder, wheel around to the front, lower the feet, quit the grasp, inclining the body forward, and descend yielding.

THE LEAPING POLE.

The exercises with the leaping pole may almost be viewed as belonging to recreative rather than systematized exercise, being essentially for the open air, and among the few which may be left for free practice after the learner has acquired a knowledge of the action and position of the different exercises. They are valuable as giving precision to the eye and hand, the power of calculating distance, and of rapidly determining the moment for executing a complicated movement, with the presence of mind to execute it, in addition to the physical exercise of the run and leap, the balance and descent.

The leaping pole should be of ash, about 12 inches in diameter, and from eight feet to ten feet long, perfectly smooth, and shod with iron at the butt or lower end.

FIRST SERIES....STANDING.
SECOND SERIES....RUNNING.
TO LEAP WIDTH.

FIRST SERIES. Position of attention, one pace from the mark, with the Exercise 1. pole at the balance, i. e. held horizontally across the body Course I. with the arms bent, the butt of the pole held slanting to the front, the hands at the distance, the right hand to the front, the palms of the hands upwards, the fingers and thumbs meeting; or with the palms of the right hand downwards.

1. Advance the right foot to the edge of the mark, advance the butt of the pole to the utmost reach, and fix it on the ground without displacing the feet or changing the grasp of the hands (Fig. 1).

Fig. 1. Fig. 2.

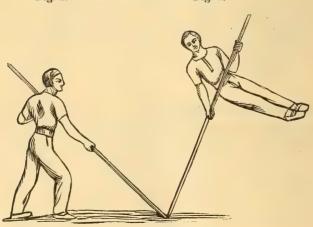


Fig. 3.

2. Spring from the feet, and pass by the left of the pole, the whole body with the lower limbs straight and extended in one line when passing the pole (Fig. 2); descend yielding, and as the feet meet the ground raise the pole to the balance.

This exercise to be repeated, advancing the left foot to the mark, the left hand to the front, and passing by the right of the pole.

TO LEAP HEIGHT.

FIRST SERIES. Exercise 2. COURSE II.

Position as in first exercise, a short distance from the barrier (in proportion to its height.

1. As in first exercise, advancing the butt of the pole to within a few feet of the barrier

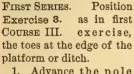
(according to its height).

2. Spring from the feet and clear the barrier, passing by the left of the pole, the body in position as in first exercise when clearing the barrier (Fig. 3); after clearing the barrier quit the grasp of the pole, throwing it back to the starting point, and descend yielding, facing the barrier.

This exercise to be repeated, advancing the left foot, the left hand to the front, and pass-

ing by the right of the pole.

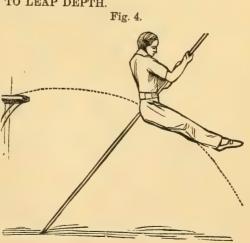




1. Advance the pole and firmly plant the butt

on the ground.

2. Press lightly from the feet, quit the platform or ground, passing by the right of the pole, the trunk of the body in the line of the pole when passing it, the lower limbs at a right angle with it, the toes pointed to the front; continue the descent (Fig. 4), and when nearing the



ground quit the grasp of the pole, throw it slightly to the left, and descend yielding.

This exercise to be repeated, passing by the left of the pole.

TO LEAP WIDTH.

SECOND SERIES. Position of attention twenty or thirty paces from the edge of the ditch, the pole at the balance, the right hand to the front.

1. Begin the advance with a short, light, and well-measured step, fixing the eye on the ditch, and reagrding it steadily, quicken the pace when nearing it, select the spot and plant the pole without halt, springing by the left, the position of body and lower limbs as in first exercise; descend yielding, bringing the pole to the balance.

This exercise to be repeated, advancing the left foot, passing by the right of the pole, the left hand to the front.

TO LEAP HEIGHT.

SECOND SERIES: Position as in fourth exercise.

Exercise 5. 1. As in fourth exercise to the spring; clear the barrier Course III. as in first exercise, quit the grasp of the pole at the commencement of the descent, letting it fall to the rear without touching the barrier, and descend yielding, facing the barrier.

This exercise to be repeated, advancing the left foot, the left hand to the front, and passing by the right of the pole.

THE HORIZONTAL BEAM.

The exercises on this machine follow in natural order the preceding simple exercises of progression. They do but carry such exercises one step farther, by increasing the difficulties of their execution.

In reality the physical difficulty of walking on a beam raised a foot above the floor is no greater than that of walking on one of the planks of the floor itself, provided the former is as firm as the latter, and its surface as level and secure to the foot; and to walk on a beam a hundred feet above the ground is physically no more difficult than either. Therefore the difficulty to be overcome in walking along an elevated beam presenting a surface sufficiently broad to admit of the complete placing of the foot, and free from all oscillation and vibration, is entirely mental, arising, it may be, from many and conflicting causes, in which actual fear has no share. It is most important that both instructor and learner should be aware of this, because from the latter it will remove an imaginary difficulty, while the former will, from it, see the propriety and necessity of patience and forbearance with the defects of beginners in the simplest exercises on this essentially rudimentary machine. The preservation of the equilibrium is the very essence of these exercises, and the acquirement of the power of maintaining it under difficulties is their avowed purpose and object.

The first series, sitting, is of the simplest description, and, as shown in the note introductory to the section, its exercises are executed in the position in which the equilibrium is maintained with the least effort.

The second series, WALKING UPRIGHT, is of much greater difficulty than the

first, but is still composed of exercises of a simple character.

Other exercises, such as the second series on the horizontal bar, and the second and third series on the slanting pole, may also be performed on the beam. but they properly belong to the machines in connection with which they are described.

The instructor should walk by the side of the learner, to explain the action and position of the different exercises, and to give assistance when required.

This machine is a round wooden beam, not less than 25 feet long, 9 or 10 inches in diameter at one end, and 6 or 7 inches at the other, made to move up and down between standards, and supported on iron pins running through them.

FIRST SERIES ____SITTING. SECOND SERIES UPRIGHT. THIRD SERIES CHANGES OF POSITION.

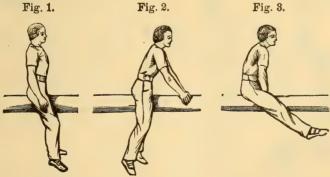
THE FRONT MARCH.

(THE BEAM LOW.)

FIRST SERIES. Exercise 1.

Position of attention facing the beam.

1. Place the hands on the beam at the distance, the Course I. thumbs and fingers straight and together, and pointed to the front; incline the head and shoulders to the front, lean strongly upon the hands, pass the right leg over by the rear, and come to the seat astride of the beam, placing the hands upon the thighs (Fig. 1), the head erect, the breast advanced, the column of the body upright, the legs pendent on either side of the beam.



2. Incline the head and trunk to the front, advance the hands (Fig. 2), rest upon them, lift the body from the beam, and bring it up again to the hands, extending the lower limbs to the front, the toes pointed to the front (Fig. 3). Repeat.

In descending, pass the right leg by the rear over to the left, press lightly from the hands and descend yielding.

THE REAR MARCH.

FIRST SERIES.

Position as in first exercise. Exercise 2

COURSE II.

1. As in first exercise, except that the left leg is passed by the rear over the beam.

2 Rest on the hands, elevate the feet in front nearly as high as the beam (Fig. 3), throw them to the rear to the reach of the arms, resting on the inner side of the thighs, the body lying inclined to the front (Fig. 2), bring both hands up to the thighs. Repeat.

Descend as in first exercise, passing the left leg by the rear over the beam.

THE SIDE MARCH.

FIRST SERIES. Exercise 3. COURSE I.

Position as in first exercise.

1. Come to the seat astride of the beam, as in first exercise; pass the left hand to the rear, pass the right leg by the front over to the left side (Fig. 4).

Fig. 4.

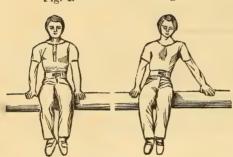


Fig. 5.

Advance the left hand along the beam to the reach, inclining the body in the same direction (Fig. 5), lift the body up close to the left hand, preserving the balance, bring the right hand up to the body. Repeat.

In descending, press lightly from the hands, shoot out the lower limbs to the front, and descend yielding.

THE FRONT MARCH, HANDS ONLY.

Fig. 6.

FIRST SERIES. Exercise 4. COURSE II.

Position as in first exercise.

1. As in first exercise.

2. Rest upon the hands, ris-

ing from the seat, the lower limbs pendent, the toes pointed downward (Fig. 6), incline the body to the right front, advance the left hand, incline the body left front, advance the right hand beyond the left. Repeat.

Descend as in first exercise.

THE FRONT MARCH, BOTH HANDS AT ONCE.

FIRST SERIES. Exercise 5. Course II.

Position as in first exercise.

- 1. As in first exercise.
- 2. Rest upon the hands as in preceding exercise, Fig. 6,

spring to the front with both hands, inclining the body to the front, the lower limbs compact, but free. Repeat.

Descend as in first exercise.

THE REAR MARCH, BOTH HANDS AT ONCE.

FIRST SERIES.

Position as in first exercise.

Exercise 6.

1. As in second exercise.

Course II.

2. Rest upon the hands, spring to the rear with both

hands, inclining the body slightly to the front. Repeat.

Descend as in second exercise.

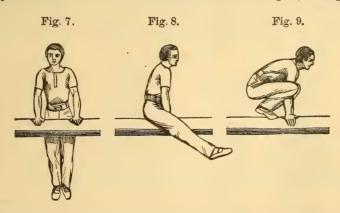
THE FRONT MARCH, THE LEFT FOOT LEADING.

(THE BEAM HIGH.)

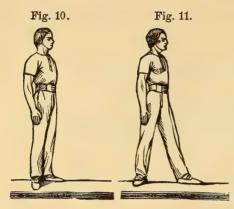
SECOND SERIES. Position as in first exercise.

Exercise 7.
COURSE I.

Raise the hands and place them on the beam as in first exercise, bend the knees, and on the return extension, spring from the ground, press strongly with the hands, extend the arms, and raise the trunk of the body above the beam, the legs straight and together, the feet together, and pointed to the ground (Fig. 7); pass the right leg over by the rear, and come to the seat astride of the beam, as in first exercise, Fig. 1; replace the hands, extend the lower limbs to the front (Fig. 8), incline the body forward, rest on the hands, sweep the feet by the rear, bending the legs, and place the toes on the beam, close behind the hands (Fig. 8); straighten



the legs, rising from the rest on the palms to the tips of the fingers, rest entirely on the feet, and rise upright.



2. Make a half-face to the right, bringing the heel of the left foot into the hollow of the right, the left foot pointed straight along the beam, the right directly across the beam (Fig. 10), the rest of the body in the position of attention.

3. Advance the left foot a pace along the beam (Fig. 11), incline the body to the front over the advanced foot, and bring up the hollow of the right foot again to the heel of the left, the upper part of the body and

the arms remaining throughout in the position of attention. Repeat.

On descending come to the front, bend the knees, keeping the feet on the beam, advance the hands, the palms downwards, the fingers to the front, place them on the beam in front of the feet, as in the ascent (Fig. 9), rest on the hands, lift and separate the feet, and sink to the seat on the beam; complete the descent as in first exercise

This exercise to be repeated with the right foot leading.

THE FRONT MARCH, RIGHT AND LEFT.

SECOND SERIES.

Position as in first exercise.

Exercise 8. Course I.

1. As in seventh exercise.

COURSE 1. 2. Advance the left foot a pace along the beam, the toes pointed slightly outwards, incline the body to the front over the advanced foot, bring the right foot to the front and place it on the beam in advance of the left, the body as in preceding exercise. Repeat.

Descend as in seventh exercise.

THE SIDE MARCH.

Fig. 12.

Second Series. Exercise 9. Position as in first exercise.

1. As in seventh exercise.

COURSE II. 2. Face to the right, bringing both feet across the beam, and resting on the hollow of the foot (Fig. 12); advance the left foot a short step along the beam, incline the body to the left over the foot, bring up the right foot close to the left. Repeat.

The trunk of the body and the arms remaining in the position of attention throughout.

Face to the front and descend as in seventh exercise.

This exercise to be repeated with the right foot leading.

THE REAR MARCH, THE LEFT FOOT LEADING.

SECOND SERIES.
Exercise 10.
COURSE II.

Position as in first exercise.

1. As in seventh exercise, to the upright position on the beam, except

that the left leg is passed over the beam, bringing the back to the line of march.

- 2. Make a half-face to the left, bringing the heel of the right foot into the hollow of the left, the right foot pointed straight along the beam, the left directly across the beam, the rest of the body in position.
- 3. Rest on the right foot, pass the left a step to the rear, rest on the left foot; and bring the right foot again up to the left. Repeat.

This exercise to be repeated with the right foot leading.

THE REAR MARCH, RIGHT AND LEFT.

Second Series. Position as in first exercise.

Exercise 11. As in preceding exercise.

COURSE II. 2. Rest on the right foot, pass the left a step to the rear, the toes first meeting the beam, the heel following; rest on the left foot and pass the right a step to the rear. Repeat.

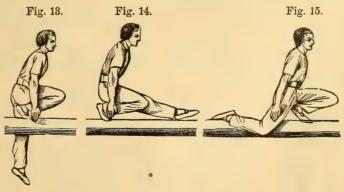
TO MARCH TO THE FRONT, ONE FOOT ON THE BEAM.

SECOND SERIES. Position as in first exercise.

Exercise 12. 1. As in seventh exercise.

Course III.

2. Bend the knees until they jut over the toes, inclining the body forward, and resting on the toes, the arms remaining extended by the sides, remove the left foot from the beam, let the leg fall straight by the side of the beam, slightly to the rear, the toes pointed to the ground (Fig. 13); elevate the left leg to the front by the side of the beam, retaining it straight throughout, and place the heel upon the beam, a full step in advance of the right (Fig. 14), incline the body forward, bringing the toes of the left foot upon the beam, bend the left knee, the heel rising as the body advances, let the right leg gradually straighten until the instep rests upon the beam (Fig. 15), incline the head and shoulders to the front, let the right leg fall straight by the side of the beam and complete the step as with the left. Repeat.



This exercise to be repeated backwards, reversing the movement.

TO CHANGE FRONT.

THIRD SERIES. Exercise 13. COURSE III.

From the front march sitting, Exercise 1, First Series. From the rear march sitting, Exercise 2, First Series.

From the front march, hands only, Exercise 4, First Series.

From the front march, both hands at once, Exercise 5. First Series.

From the rear march, both hands at once, Exercise 6, First Series.

1. Complete the step, placing the hands on the thighs.

2. Pass the right leg over the beam by the front, placing it beside the left: change the seat, pass the left over the beam, turning to the left, adjust the seat, coming square to the front.

A SECOND METHOD.

THIRD SERIES. Exercise (4.

1. Complete the step, placing the hands upon the thighs.

Course III.

2. Pass the right leg over the beam by the rear, at the same time changing the position of the left hand, throw the left leg over the beam, at the same time bringing the right hand opposite the left, and come square to the front.

TO CHANGE POSITION.

THIRD SERIES. Exercise 15. Course III.

From the front march, left foot leading, Exercise 7, Second Series.

From the front march, right and left, Exercise 8, Second Series.

From the rear march, left foot leading, Exercise 10, Second Series.

From the rear march, right and left, Exercise 11, Second Series.

1. Complete the step.

2. Descend to the beam as in the seventh exercise, placing the hands upon the thighs.

3. Replace the hands upon the beam, extend the lower limbs to the front as in Fig. 8, incline the body to the front, rest on the hands, and re-ascend as in seventh exercise, Fig. 9.

Fig. 16.

TO REST ON THE BEAM.

THIRD SERIES. Exercise 16. COURSE III.

From the same exercises (Nos. 7,

8, 10, 11, Second Series.) 1. Complete the step.

2. Descend to the beam as in seventh exercise.

3. Incline to the front, pass the right leg over the beam by the rear, turning the body to the right, lean forward, rest upon the waist on the beam, let the arms fall pendent over the beam (Fig. 16), the legs together

and straight, the toes pointed to the ground.

4. Reverse the order of the movements on rising from the rest.

TO PASS UPON THE BEAM.

(TWO MEN MEETING.)

THIRD SERIES. From exercises (Nos. 7, 8, Sec-Exercise 17. ond Series).

Course III. 1. Complete the step.

2. Let the first man come to the rest across the beam, as in preceding exercise, and the second then resume the march, passing the foot clearly over and beyond the trunk of the first man (Fig. 17), who will then rise as in preceding exercise and resume the march.

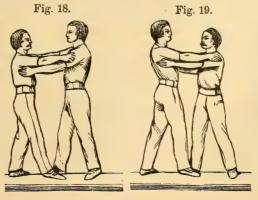


A SECOND METHOD.

THIRD SERIES.

From the same exercises (Nos. 7, 8, Second Series).

1. Let each man advance the right foot, place them together, the toes slightly turned outwards, then let each advance the right hand, and clasp the outside of the other's left arm near the shoulder, advance the left hand, and with the palm press against the other's right side, under the arm (Fig. 18); let each slowly incline to the front, resting on the right foot; remove the left foot from the beam, swing the leg round to the front (the body turning), and place it on the beam a short distance in advance of the right, making a complete turn with the body during the move-

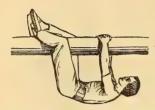


ment, and coming face to face (Fig. 19), giving and receiving support; let each lightly remove the hands, resume the front, and complete the march.

TO DESCEND FROM THE BEAM.

THIRD SERIES. (From the seat astride of the beam, when the beam is raised.)

Fig. 20.



1. Lean forward until the breast touches the beam, passing both hands under the beam and taking the intergrasp beneath, pass both legs around the beam, and cross the ankles, the right in front of the left; slowly incline to the right, and let the body pass under the beam, the hands and feet ascending to the surface, as the trunk descends beneath it (Fig. 20), untwine the feet, and lower them to the vertical line,

quit the grasp, and descend yielding.

TO RE-ASCEND THE BEAM.

Fig. 21.

THIRD SERIES. (From the position under the beam of preceding exercise, Fig. 20.)

1. Slowly detach the hands from their intergrasp above the beam, taking instead a strong clasp with the open palm, slowly relinquish the clasp of the left, and rapidly pass it under the beam by the front to the right side, at the same time swinging the left leg under the beam with sufficient force to raise the head and shoulders above the beam on the same side; hold strongly by the clasp of the hands, pass the right leg over

the beam until the thigh is on its surface, bring the left arm on the surface of beam (Fig. 21), elevate the trunk, and rise, seated on the beam.

All the exercises on the under side of the slanting pole may be executed on the beam, advancing the whole hand as far as the wrist, on its surface.

Also, the exercises in rising above the horizontal bar, the open clasp of the palm being substituted for the grasp of the closed hand.

THE VAULTING BAR.

Nothing could more distinctly show the nature and importance of progressive exercise than the apparatus of this section, each succeeding machine presenting in a more difficult form the exercises of its predecessor. Thus, as running naturally followed walking, and leaping followed the race at speed, so the modified leap with the rope and pole is introductory to vaulting, where, from playing a secondary part, the upper limbs pass to one of equal importance with the lower ones.

The bar, of which the girth will admit of its being grasped by the hand, and

which can be elevated and depressed to suit the capacity of the learner, is the most simple form of the vaulting machine; and as will be seen by the description in the text of the action and position preparatory to the rise, it is similar to the first standing leap; with this distinguishing difference, that the hands grasp the barrier, and the upper limbs take up the effort after the lower limbs

have completed the spring.

In the first form of vaulting the body is carried over the barrier in a horizontal line, being from head to foot, when above the bar, in the exact line of the bar itself. In the second form, the lower half of the body is lifted by the action of the loins, elongated and elevated vertically above the hands, and thrown straight to the front. A third form which unites in some degree both of these, is when the body from the vertical position above the bar is thrown to the right or left front according to the side on which the vault is to be made. All these forms of vaulting require special care on the part of the instructor, who should impress upon the learner at every opportunity the necessity for keeping the lower limbs in position and close together.

The position of the instructor should be in front of the learner, with one hand grasping the wrist nearest to him, and the other held in readiness to give

assistance, if required.

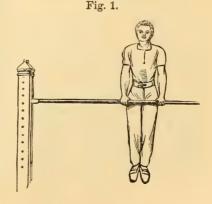
The vaulting bar should be of ash (specially selected for its straightness and freedom from knots), turned perfectly round, $2\frac{1}{4}$ inches in diameter, except at the ends, where square shoulders or 'tenons' should be formed, to run up and down the grooves or space between the standards. The standards should be seven feet apart and seven feet high, formed in two pieces with a space of $1\frac{3}{4}$ inches between them to receive the shoulders at the ends of the bar, and pierced with holes three inches apart, fitted with moveable wrought iron pint for the bar to rest on. Where it is desired to have the bar of less diameters it should be bored throughout its length, and a steel rod or 'core,' specially tempered, inserted, terminating at each end in a brass cap, fitting the shoulder of the bar.

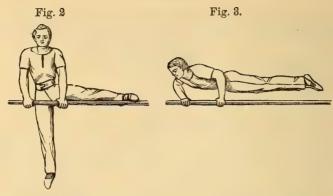
SINGLE SERIES.

TO VAULT OVER THE BAR IN THREE MOVEMENTS.

SINGLE SERIES. Position of attention, facing the bar, close to it.

- 1. Raise the hands and grasp the bar; the hands at the distance, the fingers and thumbs meeting; lift the feet from the ground, press strongly with the hands, rising to the full extension of the arms and inclining the body slightly forward during its ascent; the head erect, the column of the body upright, the legs straight and together, the feet together, the toes pointed to the ground (Fig. 1).
 - 2. Raise the right leg, retaining





its extension, and place the foot upon the bar, the hollow of the foot resting on it (Fig. 2).

3. Raise the left leg, and bring the left foot up to the right, clear the bar, the whole column of the body and the lower limbs in one horizontal line over it, the arms bent, the chest turned towards the bar (Fig. 3,) quit the grasp, and descend yielding, facing the bar opposite the point grasped by the hands.

This exercise to be repeated on the left.

TO VAULT OVER THE BAR IN TWO MOVEMENTS.

SINGLE SERIES. Position as in first exercise.

Exercise 2 1. As in first exercise.

COURSE II. 2. Lean forward across the bar, press the lower limbs to the front under the bar, and as they return to the rear throw them to the right, clear the bar, as in preceding exercise (Fig. 3), quit the grasp of the hands, and descend yielding, facing the bar.

This exercise to be repeated on the left.

TO VAULT OVER THE BAR IN ONE MOVEMENT.

SINGLE SERIES. Position as in first exercise.

Exercise 3.

1. Raise both hands and grasp the bar as in first exercise, Course II press from both hands and feet simultaneously, throw both feet with the lower limbs in position to the right, clear the bar, the trunk and lower limbs in the position of the first exercise (Fig. 2), quit the grasp, and descend yielding.

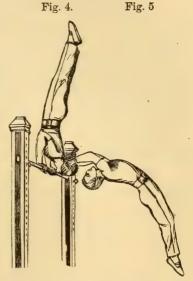
During this exercise the body should make a complete turn, the feet describing a semicircle diagonally, the chest at each point of the ascent and descent being continually turned towards the bar, the position of the body on the completion of the descent being as distinctly facing the bar as it was preparatory to the ascent.

This exercise to be repeated on the left.

TO VAULT OVER THE BAR BY THE BACK LIFT.

SINGLE SERIES. Position as in Exercise 4.

Course III. 1. Raise both hands and grasp the bar, as in first exercise; press strongly with the hands and feet simultaneously, and throw the body over the bar in a straight line vertically above the head, the arms bending during its ascent, the elbows held close in by the sides, the head and shoulders inclined to the front, the column of the body and the lower limbs. with the toes pointed upward, in a vertical line when above the bar (Fig. 4); from this point, throw the feet to the front, bending the back inwards, and raising the head as the feet approach the ground, quit the grasp (Fig. 5), and descend yielding, the back to the bar.



TO VAULT OVER THE BAR BY THE BACK LIFT, IN TWO MOVE-MENTS.

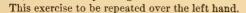
Single Series. Position as in first exercise.

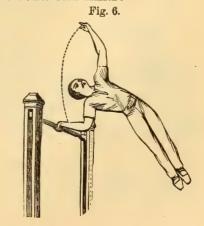
Exercise 5. 1. As in first exercise (Fig. 1).

COURSE III. 2. Press the lower limbs to the front, as in second exercise, and as they return to the rear, throw them straight above the head as in fourth exercise (Fig. 4), the arms bending during the ascent; clear the bar and descend as in fourth exercise.

TO VAULT THE BAR OVER ONE HAND.

Position as in SINGLE SERIES. first exercise. Exercise 6. 1. As in fourth COURSE IV exercise, but during the elevation of the lower limbs above the bar, instead of retaining the body between the hands, incline it over the right arm, the trunk and lower limbs turning towards the right; complete the elevation of the lower limbs until they rise straight above the bar over the grasp of the right hand, quit the grasp of the left, and pass it above the head; let the feet descend (Fig. 6), the right side next the bar, quit the grasp of the right hand, and descend yielding.





TO VAULT THE BAR WITH THE HANDS ONLY.

SINGLE SERIES. Position as in first exercise.

Exercise 7. 1. Spring up and grasp the bar with both hands, as in COURSE IV. first exercise, and in lifting the feet from the ground press them to the front under the bar; on their return oscillation, rapidly bend the arms, until the breast rises above the bar, press strongly with the hands, continue the upward movement of the body, and at the same time throw the lower limbs in position to the right, clear the bar, and descend yielding.

This exercise to be repeated on the left.

TO VAULT THE BAR WITH THE HANDS ONLY BY THE BACK LIFT.

SINGLE SERIES. Position as in first exercise.

Exercise 8.

1. As in preceding exercise until the breast rises above Course IV.

the bar, at this point press the elbows close in by the sides, incline the head and shoulders to the front, elevate the lower limbs vertically above the head as in fourth exercise (Fig. 4), and descend yielding (Fig. 5).

TO VAULT THE BAR WITH THE HANDS ONLY, OVER ONE HAND.

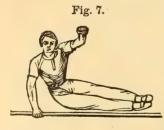
SINGLE SERIES. Position as in first exercise.

Exercise 9.

1. As in preceding exercise, but during the elevation of the lower limbs above the bar, incline the body over the right arm, complete the elevation of the lower limbs, and the descent as in sixth exercise (Fig. 6).

This exercise to be repeated over the left hand.

TO VAULT THE BAR WITH ONE HAND.



SINGLE SERIES. Position of attention facing the bar, the bar on the left.

1. Grasp the bar strongly with the left hand, slightly bend the lower limbs, and on their return extension, spring from the ground, incline the body strongly over the right arm, rapidly elevate the left hand above the head, and pass the lower limbs, straight and together, over the bar (Fig. 7), quit the grasp,

and descend yielding, facing the bar.

THE VAULTING HORSE.

This is a machine of much higher order than the bar, and presenting a much wider range of exercises, second to none in value and number.

The three series into which the exercises divide themselves are very distinctly marked, and admit of progressive practice long after the correct action and position have been attained, by increasing the elevation of the machine.

These exercises can scarcely be too frequently practiced, as they give valuable and widely varied employment to both upper and lower limbs, and also to the trunk; and this machine is always found an excellent one with which to begin the lesson, because it affords much and rapid movement without severe or localized effort. The first series is clearly introductory to the second. The third series is very artistic and effective, and cultivates to the highest attainable point that precision and security of grasp and spring which are so valuable in all exercises when practically applied.

The position of the instructor should be close to the machine, in front of the learner, directing every motion, and in the early stages of his practice counting the time of his movements, and pointing out to him the features of the position in the ascent, rest, and descent. The instructor should also repeatedly execute the exercise himself in the manner most likely to make the learner comprehend its peculiarities, at the same time encouraging him, if timid or hesitating, and losing no opportunity of obtaining his entire-confidence and trust in every situation however critical, remembering always that nothing will so readily make a man fall as the fear of falling.

There should be at least two vaulting horses in a Gymnasium, of the respective height of 4 feet and 5 feet; where a third is provided, its height should be 5 feet 6 inches. The bodies should be formed of blocks of wood from 5 feet to 5 feet 6 inches in length, and 12 inches in width, supported by strong framed legs screwed to the floor. The tops should be carefully rounded in every direction, so as to give a convenient seat for the body, and surface for the hands, whether the horse be used from the sides or from the croup. The centre portion should be carefully padded and covered with strong leather.

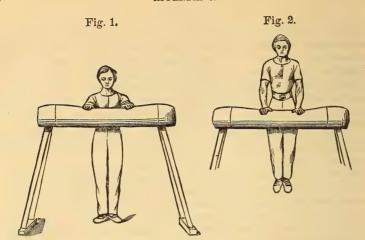
FIRST SERIES.....STANDING.
SECOND SERIES.....RUNNING.
THIRD SERIES.....BY THE CROUP.

TO VAULT ON THE HORSE IN TWO MOVEMENTS.

First Series.

Position of attention close beside the horse.

Raise the hands and place them at the distance on the back of the horse, the thumbs and fingers straight and together, and pointed to the front (Fig. 1); bend the legs, and on their return extension spring from the ground, inclining the body to the front, press strongly with the hands, extend the arms, and raise the trunk of the body above the horse, the legs straight and together, the feet together, and pointed to the ground (Fig. 2).



2. Elevate the right leg, and by a continuous movement bring it over the Fig. 3. back of the horse, the column of the body



back of the horse, the column of the body turning with it, and as the right thigh approaches the right hand, advance the latter in a line with the left hand, and slowly lower the body to the saddle bringing the head erect and the chest and trunk well advanced, the hands lightly resting on the thighs; the lower limbs pendant, the toes pointed to the front (Fig. 3).

In descending, incline the head and trunk of the body to the front, elevate the leg to the rear until it clears the back of the horse, the

right rising to meet it, press from the hands, and descend yielding, facing the horse.

This exercise to be repeated on the left.

TO VAULT ON THE HORSE IN ONE MOVEMENT.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1 and 2. As in first exercise, except that the right leg Course I. should ascend and clear the back of the horse, in a con-

tinuous movement from the ground to the seat in the saddle.

Descend as in first exercise.

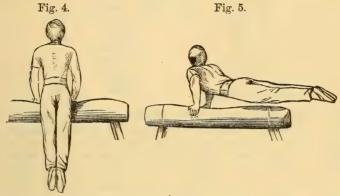
This exercise to be repeated on the left.

TO VAULT OVER THE HORSE IN TWO MOVEMENTS

First Series. Position as in exercise.

Exercise 3. 1. As in first exercise to the extension of the arms (Fig. Course I.

2. Elevate both limbs in position to the right, and pass them over the horse, incline the head and shoulders forward, advancing the right hand in a line with the left (Fig. 5), press from both hands, and descend yielding, facing the horse.



This exercise to be repeated, passing by the left.

TO VAULT OVER THE HORSE IN ONE MOVEMENT.

FIRST SERIES. Position as in first exercise.

Exercise 4. 1 and 2. As in preceding exercise, except that the legs should ascend and clear the back of the horse in one continuous movement; after the advance of the right hand, press strongly from

both and descend yielding, facing the horse.

As the body clears the horse the trunk and lower limbs should be extended in the line of the horse, the arms bent, the chest advanced, the head thrown back.

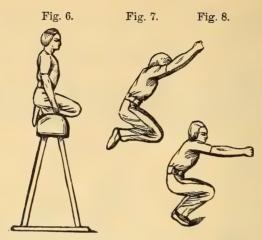
This exercise to be repeated, passing by the left.

TO VAULT ON THE HORSE RESTING ON THE KNEES.

FIRST SERIES. Position in first exercise.

Exercise 5.
COURSE II.

1. Raise the hands and place them at the distance on the back of the horse, as in first exercise; bend the legs, and on their return extension spring from the ground, press strongly with the



hands, incline the head and shoulders forward, extend the arms, and bring Fig. 9.

the knees straight up between them, resting on the saddle (Fig. 6). In descending, rapidly throw the hands to the front, as high as the face, spring from the rest with the lower limbs, upward and forward (Fig. 7), and descend yielding (Fig. 8).

TO VAULT ON THE HORSE RESTING ON THE FEET.

FIRST SERIES. Exercise 6,

Position as in first exercise.

Course III.

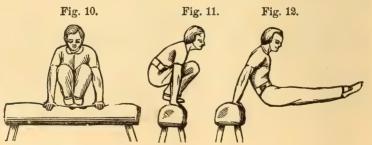
1. As in preceding exercise, except that the knees should be brought up between the arms until they are as high as the breast, and the feet instead of the knees brought to the rest on the saddle; immediately

straighten the legs and come to the position of attention (Fig. 9). In descending spring straight to the front, and descend yielding. TO VAULT OVER THE HORSE BETWEEN THE HANDS.

FIRST SERIES. Exercise 7. Course IV.

Position as in first exercise.

1. As in preceding exercise, except that the feet, instead of resting on the saddle, should



be shot through the space between the hands (Figs. 10, 11, and 12); press from the hands, and descend yielding.

TO VAULT ON THE HORSE WITH ONE HAND.

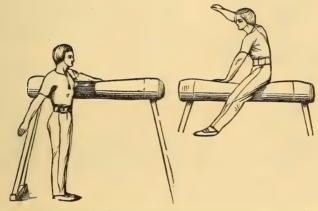
FIRST SERIES.
Exercise 8.
Course IV.

Position of attention facing the line of the horse.

1. Raise the left hand and place it on the horse, and extend the right arm to the rear (Fig. 13).

Fig. 13.

Fig. 14.



2. Bend the legs as in first exercise, and on the return extension, elevate the right leg, and pass it over the horse, at the same time rapidly elevating the right arm above the head, the hand closed, and come to the seat in the saddle (Fig. 14).

In descending, incline the head and shoulders to the front, press strongly from the left hand, and descend as in first exercise.

This exercise to be repeated with the right hand.

TO VAULT OVER THE HORSE WITH ONE HAND.

FIRST SERIES.
Exercise 9.

Position as in eighth ex-

Exercise 9. ercise. Course IV. 1. A

1. As in eighth exercise.

2. As in eighth exercise to the spring; press strongly with the left hand, elevate the right, pass the lower limbs in position over the horse (Fig. 15), and descend yielding facing the horse.

This exercise to be repeated with the right hand.



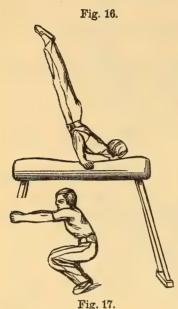


TO VAULT ON THE HORSE.

SECOND SERIES.

Exercise 10.

COURSE I.



1. Slowly begin the run, quickening the pace on the advance, and looking straight at the horse; when within 2 or 3 feet of the horse, spring from both feet, striking them full and flat upon the ground, the hands taking their place on the back of the horse immediately after the spring, pass the right leg over the horse, and come to the seat in the saddle in one movement.

Position of atten-

tion 25 or 30 feet from

the horse.

as in Fig. 3,

In descending, incline the head and trunk of the body to the front, elevate the lower limbs to the rear straight above the horse, the toes pointed upward (Fig. 16); slowly let the lower limbs, with the entire column of the body in position, fall to the right and gradually descend over the arm until the feet come to the ground, the horse on the right (Fig. 17); descend yield ing.

This exercise to be repeated on the left.

TO VAULT OVER THE HORSE.

SECOND SERIES.

Exercise 11.

Course I.

Position as in tenth exercise.

1. As in tenth exercise, quickening the pace to the utmost speed; spring as in preceding exercise, passing the

Fig. 18.



lower limbs in position over the horse to the right (Fig. 18), advance the right hand opposite the left, press strongly, and descend yielding, facing the horse

In this exercise the body should be thrown well forward in the spring, the feet should describe a semicircle, beginning at the point where they quit the ground, and finishing where they alight, the hands being the center upon which

the trunk and lower limbs turn; during this exercise, therefore, the chest should be continually turning towards the horse, the legs should be straight and together, the toes pointed, the whole body, when in the act of clearing the horse, forming one horizontal line over it.

This exercise to be repeated on the left.

TO VAULT ON THE HORSE RESTING ON THE KNEES.

SECOND SERIES. Position as in tenth exercise.

Exercise 12. 1. As in tenth exercise; spring straight to the front, the Course II. hands taking their place on the back of the horse immediately after the spring, bring both legs, with the knees closely bent up, between the arms and come to the rest on the knees, as in fifth exercise, Fig. 6.

Descend as in fifth exercise, Figs. 7 and 8.

TO VAULT ON THE HORSE RESTING ON THE FEET.

SECOND SERIES. Position as in tenth exercise.

Exercise 13. 1. As in preceding exercise, except that the feet, instead Course III. of the knees, are placed on the saddle, straighten the legs as in sixth exercise, Fig. 9.

In descending, extend the arms, spring straight to the front, and descend yielding.

TO VAULT OVER THE HORSE BETWEEN THE HANDS.

SECOND SERIES. Position as in tenth exercise.

Exercise 14. 1. As inspreceding exercise, except that the legs are still Course IV. more closely bent up, and the feet, instead of resting on the saddle, are shot through between the hands, as in seventh exercise, Figs. 10, 11 and 12; press from the hands as the feet clear the horse, and descend yielding.

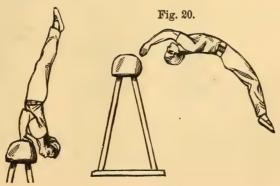
TO VAULT OVER THE HORSE BY THE BACK LIFT.

SECOND SERIES. Position as in tenth exercise.

Exercise 15.

1. As in tenth exercise to the spring; place the hands COURSE IV. upon the horse, depress the head and shoulders until the

Fig. 19.



latter are as low as the hands, and at the same time elevate the limbs, hips and loins by the rear, until they rise perpendiculary over the hands (Fig. 19), the legs straight and together, the toes pointed upwards; continue the sweep of the lower limbs, let the feet fall to the front, bending the back inwards (Fig. 20), and descend yielding.

TO VAULT OVER THE HORSE WITH ONE HAND.



SECOND SERIES. Position as in tenth

Exercise 16. exercise.

COURSE IV. 1. As in tenth exercise to the spring; place the left hand on the back of the horse, throw the right arm above the head, and pass the lower limbs in position over the horse (Fig. 21), lean forward when clearing it, press strongly with the left hand, and descend yielding, the horse on the left.

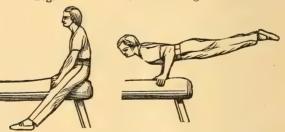
This exercise to be repeated with the right hand.

TO VAULT TO THE CROUP.

THIRD SERIES. Position of attention 25 or 30 feet from the horse, facing Exercise 17.

COURSE II. 1. Slowly begin the run, quickening the pace on the advance, and when within 2 or three feet of the croup, spring from both feet, immediately placing the hands on the croup, right and left; fully separate the lower limbs during the rise, and as the body reaches the croup advance the hands 6 or 8 inches along the back of the horse, and lightly sink to the seat on the croup (Fig. 22); the head and column of the body slightly inclined to the front, the lower limbs straight, the toes pointed to the front.





In descending, incline the head and trunk to the horizontal line of the horse, elevate the lower limbs, straight and together, until they are in a line with the body (Fig. 23), shoot them out far to the rear, at the same time pressing from the hands, and descend yielding, facing the croup.

TO VAULT TO THE SADDLE.

THIRD SERIES. Position as in seventeenth exercise.

Course III. 1. As in preceding exercise, until the lower limbs rise above the croup, but instead of allowing them to rest, continue the momentum of the spring, rapidly advance both hands to the saddle and lightly sink to the seat, place both hands on the thighs, the head erect, the breast advanced, as in Fig. 24.

In descending, replace the hands on the horse (Fig. 3), elevate the lower limbs, and descend as in tenth exercise, Figs. 16 and 17.



TO VAULT TO THE CROUP, RESTING ON THE KNEES.

THIRD SERIES. Position as in seventeenth exercise.

Exercise 19.

1. As in seventeenth exercise to the closely bent, up between the arms, and let them lightly rest on the croup between the hands (Fig. 25).

In descending, incline the head and trunk of the body to the front, slowly elevate the lower limbs, and shoot them to the rear, as in seventeenth exercise (Fig. 23), and descend yielding.



TO VAULT TO THE CROUP, RESTING ON THE FEET. Fig. 26.

Third Series. Position as in seventeenth exercise.

Exercise 20,

1. As in preceding exercise, except course III. that the knees are lifted above the croup, as high as the breast, and the soles of the feet placed on the horse, straighten the legs, rising from the palms to the tips of the fingers, and stand upright on the croup (Fig. 26).

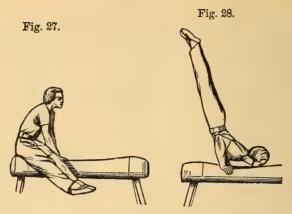
In descending, re-bend the knees, spring backwards, and descend yielding, facing the croup.

TO VAULT TO THE CROUP, THE LEGS ON THE RIGHT.

THIRD SERIES. Position as in seventeenth exercise.

Exercise 21. 1. As in seventeenth exercise to the COURSE IV. spring, but instead of separating the lower limbs, keep them together, and during the rise to the croup, pass them to the right, and slowly sink to the side-seat on the croup (Fig. 27).





In descending, incline the head and shoulders to the front, press strongly from the hands, elevate the lower limbs over the horse until they are above the head (Fig. 28), slowly let the lower limbs, with the entire column of the body, fall to the left, and gradually descend over the arm, until the feet come to the ground, the horse on the left.

This exercise to be repeated on the left, descending on the right.

TO VAULT TO THE CROUP, THE LEGS PASSING FROM RIGHT TO LEFT.

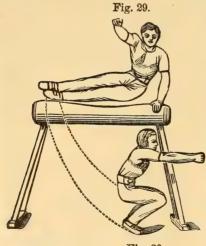


Fig. 30.

THIRD SERIES. Position as in seventeenth ex-

1. As in preceding exercise, until the rise above the croup, but instead of allowing the legs to rest upon it, continue the momentum of the spring, lifting the right hand and extending it rapidly above the head, and carry the limbs forward and upward over the horse in front (Fig. 29), and turning completely round upon the left hand, descend yielding, facing the line of the horse, the horse on the left (Fig. 30).

This exercise to be repeated, the legs passing from left to right.

THE FIXED PARALLEL BARS.

ALL exercises on this machine are performed between the bars, and are all virtually executed by the trunk and upper limbs, especially the former. They all begin with the body in the position given in the first exercise, with the feet lifted clear from the ground.

The exercises naturally divide themselves into three series:—The first comprises those which consist of traveling along the bars, following the natural shape and construction of the machine, to front or rear, single or double handed; the second, those of oscillation between the bars, in which the exercises may be said to consist of an evolution, more or less complicated, passing from front to rear, or vice versa, between two points, of which the hand-grasp forms, as it were, the pivot or centre. This is a most valuable and attractive series, giving abundant and varied exercise to the entire column of the body, and to the arms whether bent or extended; the third series is a combination of these two, also valuable, as strongly addressing the trunk of the body.

Every exercise is here given in its perfect form, but with beginners of ordinary physical capacity, they may and should be approached through several stages of less difficulty. Thus, in those of the first series, the perfectly upright position of body, advanced breast, straight limbs, and erect head, may be departed from in the earlier stages of practice. Also, a free lateral inclination from hand to hand; and, in the front and rear exercises, with both hands at once, a more energetic upright lift of the lower limbs may be allowed.

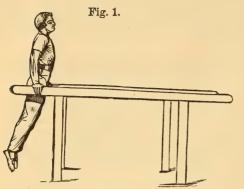
The second series may be approached, first, by beginning with the feet between the uprights, near the entrance to the bars, with or without a spring, as may be required; second, from the centre of the bars under the hands and from the ground direct, with or without a spring; third, as given in the text, with the feet free from the ground, in position, the action coming from the loins, resting entirely on the hands. This machine is invaluable in a gymnasium, the exercises being not only numerous, but varied, interesting, and in themselves pleasurable, capable of much artistic effect, and requiring equally muscular power and dexterity of action in trunk and limb. Again, there is no single exercise on this machine which requires violent or sudden effort; all the movements flow from one point to another, and the skill displayed in their execution and the advantage obtained from their practice lie in the certainty, steadiness, and regularity with which the complex action of the step is performed.

A point demanding very careful observance is, that the learner shall never separate his legs while executing the exercises of the second series; they must be kept rigidly in position, and this principle must be firmly inculcated from the first day's lesson.

The Parallel Bars should be from 8 feet to 10 feet long, 20 inches apart inside, and fixed at a height from the floor of 3 feet 8 inches. The upper surface of the bars should be rounded to fit the hands.

FIRST SERIES.....Traveling.
SECOND SERIES....Oscilating.
THIRD SERIES.....Combinations.

THE SINGLE MARCH FORWARDS.



FIRST SERIES. Po-Exercise 1. sition COURSE I. of attention at the entrance to the bars.

1. Raise the hands and place them on the bars, the thumbs inside, the fingers outside, extended, and pointed downwards; press from the hands until the arms are completely extended, the

head upright, the eyes directed to the front, the chest advanced, the shoulders square to the front, the column of the body upright and firm, the lower limbs straight and together, the feet together and pointed to the ground (Fig. 1).

2. Rest on the left hand, advance the right six inches beyond it along the bar, advance the left six inches beyond the right. Repeat.

THE SINGLE MARCH BACKWARDS.

FIRST SERIES.

Position of attention, the back to the bars.

Exercise 2.

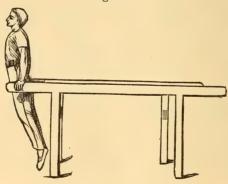
1. As in first exercise (Fig. 2).

Course I.

2. As in first exercise, except the movement is back-

ward instead of forward. Repeat.

Fig. 2.



THE DOUBLE MARCH FORWARDS.

FIRST SERIES. Position as in first exercise.

Exercise 3. 1. As in first exercise,
COURSE III. except that the lower limbs
are bent at the knee at a right angle with the body,
the toes pointed to the rear (Fig. 3).

2. Spring forward with both hands, the distance of the step in first exercise, retaining the body and lower limbs in position. Repeat.

THE DOUBLE MARCH BACKWARDS.

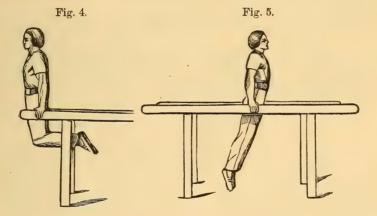
FIRST SERIES. Position as in second exer-Exercise 4. cise.

COURSE I. 1. As in third exercise.

2. The same as in third exercise, except that the movement is backward instead of forward. Repeat.



Fig. 3.

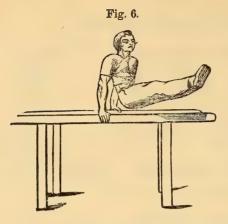


TO CLEAR THE BAR BY THE FRONT.

SECOND SERIES. Position of attention between the bars at the centre.

Exercise 5.

1. Raise the hands and place them on the bars opposite each other, the thumbs inside, the fingers outside, extended and pointed downwards. Press from the hands until the arms are completely extended, the legs together and straight, the toes pointed to the ground, the head erect, the trunk of the body upright, the chest advanced, the shoulders



square to the front (Fig 5).

2. Elevate the lower limbs in position, the toes pointed to the front until they rise above the level of the bars, and pass them over the right bar (Fig. 6); when clear of the bar, relax the extension of the limbs, press strongly from the left hand, spring to the ground, and descend yielding.

This exercise to be repeated, clearing the left bar.

TO CLEAR THE BAR BY THE REAR.

SECOND SERIES.

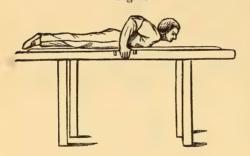
Exercise 6.

COURSE II.

Postion as in fifth exercise.

1. As in fifth exercise.

2. Elevate the lower limbs to the front, as in preceding Fig. 7. exercise, and on their return



exercise, and on their return oscillation to the rear incline the head and shoulders to the front, bending the arms, and elevate the lower limbs, the toes pointed to the rear, until they rise above the level of the bars, and pass them over the right bar; (at this point the lower limbs, trunk and head, are in the horizontal line of the bars, Fig. 7,) press strongly from the left hand,

clear the right bar, spring to the ground, and descend yielding, facing the bars.

This exercise to be repeated, clearing the left bar.

TO CLEAR THE BAR BY THE REAR.

A SECOND METHOD.

SECOND SERIES.

Position as in fifth exercise.

Exercise 7.

1. As in fifth exercise.

COURSE III. 2. Slowly incline the head and shoulders to the front, without swing, bending the arms, elevating the lower limbs to the rear, and clearing the bar, as in preceding exercise.

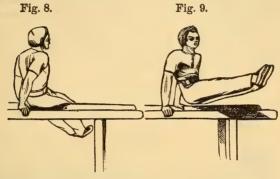
This exercise to be repeated, clearing the left bar.

TO REST ON THE LEFT BAR AND CLEAR THE RUGHT, BY THE FRONT.

SECOND SERIES. Position as in fifth exercise.

Exercise 8. 1. As in fifth exercise.

Course I. 2. Elevate the lower limbs in position to the front until they rise above the level of the bars, pass them over and let them rest on the left bar, relaxing the extension (Fig. 8)



3. Press strongly with the hands, elevate the lower limbs in position above the bar, sweep them across and clear both bars to the right front (Fig. 9), and descend yielding, facing the line of the bars.

This exercise to be repeated, resting on the right bar, and clearing the left.

TO REST ON THE LEFT BAR AND CLEAR THE RIGHT, BY THE REAR.

SECOND SERIES. Position as in fifth exercise.

Exercise 9. 1. As in fifth exercise.

COURSE II. 2. Slowly incline the head and shoulders to the front, bending the arms; elevate the lower limbs, the toes pointed to the rear, until they rise above the level of the bars, as in Fig. 7; at this point pass them over and let them rest on the left bar, relaxing the extension, the feet together, the toes pointed downwards, as in Fig. 10.

3. Incline the head and shoulders to the front, bend the arms until the shoulders are as low as the bar, and at the same time elevate the lower limbs in position, sweep them across both bars to the left rear, and descend yielding.

This exercise to be repeated, resting on the right bar, and clearing the left.

TO REST ON THE RIGHT BAR IN FRONT AND CLEAR IT BY THE REAR.

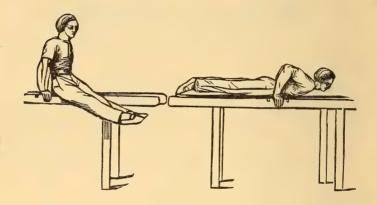
SECOND SERIES. Position as in fifth exercise. Exercise 10. I. As in fifth exercise.

COURSE II

2. Elevate the lower limbs in position to the front, until they rise above the level of the bars, pass them over and let them rest on the right bar, relax the extension (Fig. 10); press strongly with the hands, elevate the lower limbs in position above the bar, pass them between the bars, and let them swing to the rear, at the same time bending the arms until the shoulders are as low as the bars, and bringing the column of the body with the lower limbs to the horizontal line of the bars (Fig. 11); clear the right bar by the rear and descend yielding, facing the bars.

Fig. 10.

Fig. 11.



This exercise to be repeated on the left bar.

The same exercise to be repeated with the following variations:-

1. Resting on the right bar in the front and clearing the left by the rear.

2. Resting on the left bar in the front and clearing the right by the rear.

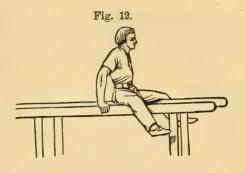
TO REST ON BOTH BARS IN FRONT, AND CLEAR THE RIGHT BY THE REAR.

SECOND SERIES. Position as in fifth exercise.

Exercise 11. As in fifth exercise.

Course II. 2. Elevate the lower limbs in position, the toes pointed

to the front, until they rise above the level of the bars; at this point separate the lower limbs and let them fall to the rest on the bars (Fig. 12); re-elevate them above the bars, coming to the position at the elevation, let them sweep to the rear, as in preceding exercise, clear the right bar, and descend yielding.



This exercise to be repeated, clearing the left bar.

TO REST ON THE LEFT BAR IN THE REAR, AND CLEAR IT BY

SECOND SERIES. Position as in fifth exercise.

Exercise 12. 1. As in fifth exercise.

COURSE II. 2. As in ninth exercise to the rest on the bar; incline the head and shoulders to the front, bend the arms until the shoulders are as low as the bars, the head between them, re-elevate the lower limbs in position, passing them between the bars, let them sweep to the front and clear the left bar, as in Fig. 9, and descend yielding. During the last movement bring the head and shoulders to the vertical position, gradually straighten the arms and retain them straight while the feet clear the bar.

This exercise to be repeated on the right bar.

The same exercise to be repeated with the following variations:-

- 1. Resting on the left bar in the rear, and clearing the right in the front.
- 2. Resting on the right bar in the rear, and clearing the left by the front.

TO REST ON BOTH BARS IN THE REAR, AND CLEAR THE RIGHT BAR BY THE FRONT.

SECOND SERIES. Posi-Exercise 13. tion as in COURSE II. fifth exercise.

ercise.

1. As in fifth exercise.

2. Slowly incline the head and shoulders to the front, bending the the arms, elevate the lower limbs to the rear, until they rise above the level of the bars, fully



separate them and let them fall to the rest on the bars (Fig. 13); incline the

head and shoulders to the front, re-elevate the lower limbs, and as they sweep o the front in position, let them clear the right bar, and descend yielding. This exercise to be repeated, clearing the left bar.

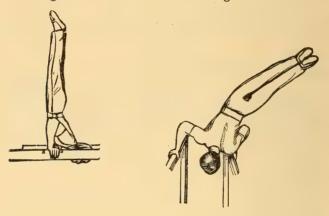
TO PASS BY THE REAR BY THE SINGLE SWING.

SECOND SERIES. Position as in fifth exercise.

Exercise 14. 1. As in fifth exercise.

Course III. 2. Elevate the lower limbs in position until the feet are as high as the face; from this let them fall in a full sweep, and passing between the bars, rise to the rear until they are above the head; during the latter half of this oscillation, let the arms slowly bend until the shoulders are as low as the bars, the head between them (Fig. 14); slowly let the lower limbs

Fig. 14. Fig. 15.



with the entire column of the body in position incline, and gradually descend to the right over the arm (Fig. 15), until the feet come to the ground, the bar on the right.

This exercise to be repeated over the left bar.

TO REST ON THE LEFT BAR IN FRONT, AND CLEAR IT IN THE REAR BY THE SINGLE SWING.

SECOND SERIES. Position as in fifth exercise.

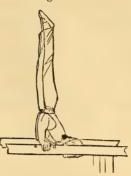
Exercise 15. 1. As in fifth exercise.

COURSE III. 2. Elevate the lower limbs in position to the front, to the level of the bars, pass them over and let them rest on the left bar, relaxing the extension (Fig. 16); re-elevate the lower limbs in position above the bar, pass them between the bars, and as in preceding exercise, incline the head and shoulders to the front, complete the rearward oscillation (Fig. 17), descending to the ground over the left bar, the bar on the left.





Fig. 17.



This exercise to be repeated over the right bar.

The same exercise to be repeated with the following variations:

- 1. Resting on the left bar in front and clearing the right in the rear.
- 2. Resting on the right bar in front and clearing the left in the rear.

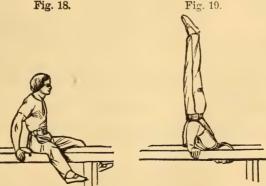
TO REST ON BOTH BARS IN FRONT, AND CLEAR THE LEFT BAR IN THE REAR BY THE SINGLE SWING

SECOND SERIES. Position as in fifth exercise.

Exercise 16. 1. As in fifth exercise.

COURSE III. 2. Elevate the lower limbs in position, the toes pointed to the front, until they rise above the level of the bars; at this point separate the lower limbs and let them fall to the rest on the bars (Fig. 18); press strongly with the hands, re-elevate the lower limbs above the bars, and as they sweep to the rear, incline the head and shoulders to the front, bending the arms as in fourteenth exercise, complete the rearward oscillation (Fig. 19). descending to the ground over the left bar.

Fig. 18.



This exercise to be repeated clearing the right bar.

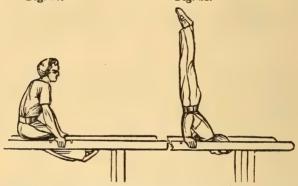
TO REST ON THE LEFT BAR IN THE REAR BY THE SINGLE SWING AND CLEAR THE RIGHT BY THE REAR.

SECOND SERIES. Position as in fifth exercise.

Exercise 17. 1. As in fifth exercise.

COURSE III. 2. As in fourteenth exercise until the elevation of the feet above the head; at this point relax the extension of the legs, pass them over and let them rest on the left bar (Fig. 20); incline the head and shoulders to the front, bend the arms until the shoulders are as low as the bars, the head between them, and at the same time again elevate the lower limbs above

Fig. 20. Fig. 21.



the head (Fig. 21); pass them across the bars to the right, descending over the right bar.

This exercise to be repeated resting on the right bar and clearing the left.

TO REST ON BOTH BARS IN THE REAR BY THE SINGLE SWING AND CLEAR THE RIGHT BY THE REAR.

SECOND SERIES. Position as in fifth exercise.

Exercise 18. 1. As in fifth exercise.

COURSE III. 2. As in preceding exercise to the elevation of the feet above the head; at this point slowly separate the lower limbs, relaxing the extension, and bring them to the rest one on each bar (Fig. 13); incline the head and shoulders to the front, and bend the arms as in preceding exercise, elevate the lower limbs above the head, and pass the legs over the right bar as in preceding exercise.

This exercise to be repeated over the left bar.

TO REST ON THE LEFT BAR IN THE REAR BY THE SINGLE SWING AND CLEAR IT BY THE FRONT.

SECOND SERIES. Position as in fifth exercise.

Exercise 19. 1. As in fifth exercise.

Course III. 2. As in preceding exercise to the rest on the left bar, and the re-elevation of the lower limbs above the head, as in Fig. 21; from

this point let the lower limbs slowly descend in position and passing between the bars sweep to the front, clear the right bar and descend yielding. During the descent of the lower limbs, bring the head and shoulders to the vertical position, gradually straighten the arms, and retain them straight while the feet clear the bar.

This exercise to be repeated resting on the right bar in the rear and clearing it in the front.

The same exercise to be repeated with the following variations:

- 1. Resting on the left bar in the rear and clearing the right in the front.
- 2. Resting on the right bar in the rear and clearing the left in the front.

TO REST ON BOTH BARS IN THE REAR BY THE SINGLE SWING AND CLEAR THE RIGHT BAR BY THE FRONT.

SECOND SERIES.

Position as in fifth exercise.

Exercise 20.

1. As in fifth exercise.

COURSE III. 2. As in fourteenth exercise to the elevation of the lower limbs above the head; at this point slowly separate the legs, relaxing the extension, and let them fall to the rest, one on each bar; incline the head and shoulders to the front, bend the arms, re-elevate the lower limbs above the head; from this point let the lower limbs descend as in preceding exercise, clear the right bar and descend yielding.

This exercise to be repeated, clearing the left bar.

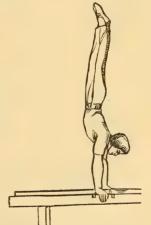
Fig. 22.

TO PASS BY THE FRONT BY THE DOU-BLE SWING.

SECOND SERIES. Position as in fifth exer-Exercise 21. cise. COURSE IV.

1. As in fifth exercise. 2. Elevate the lower limbs in position until the feet are as high as the face; from this point let them descend, and, sweeping between the bars, ascend to the rear until they are above the head, the arms remaining straight, the column of the body and the lower limbs slightly curved throughout their length (Fig. 22); from this point let the feet again descend, and passing between the bars on the return oscillation, clear the right bar in front, and descend yielding.

This exercise to be repeated on the left bar.



TO REST ON THE LEFT BAR IN FRONT AND CLEAR IT BY THE DOUBLE SWING.

SECOND SERIES.

Position as in fifth exercise.

Exercise 22.

1. As in fifth exercise.

COURSE IV.

2. Elevate the lower limbs in position to the level of the bars, pass them over and let them rest on the left bar, relaxing the extension as in Fig. 16; press strongly with the hands, re-elevate the lower limbs above the bar, pass them between the bars, and complete the double swing as in preceding exercise, clearing the left bar.

This exercise to be repeated on the right bar.

The same exercise to be repeated with the following variations:

- 1. Resting on the left bar in front and clearing the right.
- 2. Resting on the right bar in front and clearing the left.

TO REST ON BOTH BARS IN FRONT AND CLEAR THE LEFT BAR BY THE DOUBLE SWING.

SECOND SERIES.

Position as in fifth exercise.

Exercise 23.

1. As in fifth exercise.

Course IV. 2. Elevate the lower limbs in position to the front, until they rise above the level of the bars; separate them and let them fall to the rest, one on each bar, as in Fig. 18; press strongly with the hands, re-elevate the lower limbs above the bars, and complete the double swing as in twenty-first exercise, clearing the left bar.

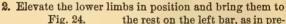
This exercise to be repeated clearing the right bar.

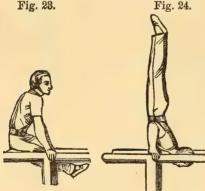
THE SINGLE MARCH AND REST FORWARDS.

THIRD SERIES. Exercise 24. Course IV. Position as in first exercise.

1. As in first exercise.

OURSE IV. Fig. 23.





the rest on the left bar, as in preceding exercises; incline the head and shoulders to the front, re-grasp the bars in advance of the thighs (Fig. 23), re-elevate the lower limbs until the feet are above the head, as in seventeenth exercise (Fig. 24); from this point let them slowly descend in position, and passing between the bars, sweep to the front, and again come to the rest on the left bar. During the descent of the lower limbs, gradually straighten the arms, and retain them straight

until the legs rest on the bar. Repeat.

At the end of the bars on the last elevation of the feet above the head, incline the trunk and lower limbs over the left bar and descend yielding as in fourteenth exercise.

This exercise to be repeated on the left, bar.

The same exercise to be repeated resting on the right and left bar alternately.

THE SINGLE MARCH AND REST BACKWARDS.

THIRD SERIES.

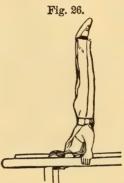
Position as in second exercise.

Exercise 25.

1. As in second exercise.

COURSE IV. 2. As in fourteenth exercise to the elevation of the feet above the head; at this point relax the extension of the legs, pass them over and let them rest on the right bar; pass both hands behind the thighs and re-grasp the bars (Fig. 25), re-elevate the lower limbs, pass them between the bars, and again let them rise above the head (Fig. 26) and again come to the rest on the right bar. Repeat. Fig. 25.





At the end of the bars on the last elevation of the feet above the head, pass over the right bar, as in preceding exercise.

This exercise to be repeated on the left bar.

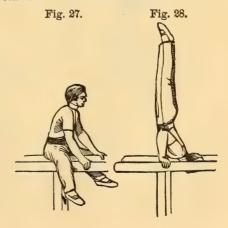
The same exercise to be repeated, resting on the right and left bar alternately.

THE DOUBLE MARCH AND REST FORWARDS.

THIRD SERIES. Position as Exercise 26. in first exer-COURSE IV. cise.

1. As in first exercise.

2. Elevate the lower limbs in position, the toes pointed to the front, until they rise above the level of the bars; at this point separate the lower limbs and let them fall to the rest on the bars: incline the head and shoulders to the front, re-grasp the bars in advance of the thighs (Fig. 27), re-elevate the lower limbs until the feet are above the head, as in twenty-fourth exercise (Fig. 28): let the lower limbs descend as in



twenty-fourth exercise and again come to the rest in front on both bars. Repeat.

At the end of the bars on the last elevation of the feet above the head, continue the movement of the lower limbs, carrying the feet completely over the head to the front, press strongly with the hands and descend yielding, the back to the end of the bars.

THE DOUBLE MARCH AND REST BACKWARDS.

THIRD SERIES. Position as in second exercise. Exercise 27.

1. As in second exercise.

COURSE IV. 2. As in fourteenth exercise to the elevation of the feet above the head; at this point slowly separate the legs, relaxing the extension, and let them fall to the rest, one on each bar; pass both hands behind the thighs, and re-grasp the bars (Fig. 29); re-elevate the lower limbs to the front, pass them between the bars, and let them rise until they are above the head (Fig. 30); slowly separate the legs, relaxing the extension, and again come to the rest on the bars. Repeat.

At the end of the bars, from the last rest, bring the lower limbs again between the bars, and shoot them out to the rear in the line of the bars, pushing strongly with the hands.

Fig. 29. Fig. 30. Fig. 31.

TO MARCH ABOVE THE BARS.

THIRD SERIES. Position as in first exercise.

Exercise 28. 1. As in first exercise.

Course IV. 2. As in twentieth exercise to the elevation of the feet above the head (Fig. 31); retain the arms straight, advance the right hand six

inches beyond the left, advance the left hand six inches beyond the right. Repeat.

At the end of the bars, carry the feet completely over the head to the ground, and descend yielding.

This exercise to be repeated backward.

This exercise to be repeated with the arms bent, as in Fig. 30.

THE MOVABLE PARALLEL BARS.

The exercises on this machine are as numerous as those on the fixed bars, but of a somewhat inferior order, although useful and interesting. They address themselves much more directly to the upper limbs, giving power and security to the grasp, and certainty and facility of action to the hand and arm. They divide themselves into three series, the first consisting of exercises executed above the bars, when low; the second, of those under the bars, when elevated to the reach of the hands, with or without oscillation; and the third, of those rising between the bars. The first is chiefly directed to the lower limbs; the second to the upper limbs alone; and the third to both. The first series may be performed also on the fixed bars, but as its exercises may be intensified or modified by the elevation or depression of the bars, they properly belong to this machine.

The position of the instructor should be on the right or left front of the

This machine consists of two bars and two sets of standards, in all respects the same as the Vaulting Bar and standards already described. The bars should be twenty-two inches apart, from centre to centre. Where there are Moveable Parallel Bars in a gymnasium, one of them is generally used for the Vaulting Bar, the other being temporarily removed.

FIRST SERIES....OVER THE BARS.
SECOND SERIES....UNDER THE BARS.
THIRD SERIES....RISING BETWEEN THE BARS.

TO CLEAR THE BARS, RESTING ON THE FIRST.

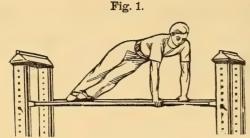
FISRT SERIES.

Exercise 1.

Course I.

Position of attention, facing the bars.

1. Raise both hands and grasp the first bar, the hands at the distance, the fingers and thumb meeting, the feet



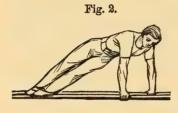
immediately under the hands.

2. Spring from the ground to the right and rest with both feet on the first bar, and at the same time pass the right hand over to the second bar opposite the left (Fig. 1).

3. Press strongly from both hands and feet, clear

the second bar, and descend yielding, facing the bars. This exercise to be repeated on the left.

TO CLEAR THE BARS, RESTING ON THE SECOND.



FIRST SERIES. Position as in first exercise. Exercise 2.

COURSE I. 1. As in first exercise.

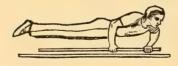
2. Spring from the ground to the right, clear the first bar; the lower limbs straight and together, and rest with both feet on the second bar, at the same time passing the right hand over to the second bar, opposite the left (Fig. 2).

3. Press strongly from both hands and feet, and descend yielding, facing the bars.

This exercise to be repeated on the left.

TO CLEAR THE BARS IN ONE MOVEMENT.

Fig. 3.



Position as in first FIRST SERIES. Exercise 3. exercise. Course II.

1. As in first exercise.

Press from both hands and feet simultaneously, throw the lower limbs. straight and together, to the right (Fig. 3), clear both bars and descend vield-

ing, facing the bars.

This exercise to be repeated on the left.

TO CLEAR THE FIRST BAR BY THE REAR AND THE SECOND BY THE FRONT.

FIRST SERIES.

Position as in first exercise.

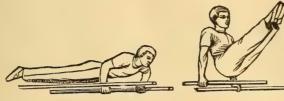
Exercise 4.

1. As in first exercise.

Course III.

2. Spring from the ground, throw the lower limbs in position to the right, and clear the first bar (Fig. 4), and at the instant of Fig. 4.

Fig. 5.



their elevation above the first bar, pass the right hand over to the second; let the lower limbs continue their fall between the bars and ascend in front (Fig. 5), clear the second bar, and descend yielding, in the line of the bars.

This exercise to be repeated on the left.

TO CLEAR BOTH BARS SEPARATELY BY THE REAR.

FIRST SERIES.

Exercise 5.

Position as in first

exercise.

Course III.

1. As in first exercise.

2. As in preceding exercise to the elevation of the lower limbs to the front after clearing the first bar; from this point let the lower limbs fall again between the bars, return to the rear

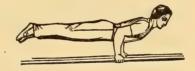


Fig. 6.

(Fig. 6), clear the second bar, and descend yielding, facing the bars.

This exercise to be repeated on the left.

TO PASS FROM THE FIRST TO THE SECOND BAR, THE RIGHT HAND LEADING.

SECOND SERIES.

Exercise 6.

Position as in first exercise.

Exercise 6.

1. Raise both hands and grasp Course I. the first bar, the hands at the distance, the fingers and thumbs together, sink to the full extension of the arms, bend the lower limbs, the knees in a line with the body, the feet behind, the head held back, the eyes directed to the reach of the hands.

2. Sustain the body in position, advance the right hand and grasp the second bar (Fig. 7), the left following; retake the grasp of the first bar with the left hand, the right following, replace the feet on the ground and rise to the first position.

This exercise to be repeated with the left hand leading.



TO PASS FROM THE FIRST TO THE SECOND BAR, CHANGING FRONT.

Fig. 8.

SECOND SERIES. Position as in first exercise.

Exercise 7. 1. As in sixth exercise.



Course II. 2. As in sixth exercise, until both hands are on the second bar, quit the grasp with the right, swing on the left, pass under the bar, advance the right hand the distance beyond the left and grasp the bar (Fig. 8), changing front; reverse the grasp of the left hand, retaking the same part of the bar, advance the the right hand again to the first bar, the left following, re-change the front, replace the feet on the ground and rise to the first position.

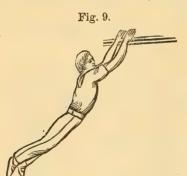
TO PASS FROM THE FIRST TO THE SECOND BAR, BOTH HANDS AT ONCE.

SECOND SERIES. Position as in first exercise.

Exercise 8. 1. As in sixth exercise, except that in lifting the feet from the

ground, press slightly from the rear, causing a forward oscillation; augment the rearward return by the action of the loins, and on the forward return, as the feet come under the bar, bend the arms and quit the grasp with both hands, and spring to the second bar; govern the forward oscillation and on the rearward return spring backwards to the first bar, replace the feet on the ground and rise to the first position.

TO PASS FROM THE FIRST TO THE SECOND BAR, BOTH HANDS AT ONCE, CHANGING FRONT.



SECOND SERIES. Position as in Exercise 9. first exercise.

COURSE IV. 1. As in preceding exercise to the spring to the second bar; augment both the forward and the rearward oscillation, and on the return forward quit the grasp with both hands, rapidly change front (Fig. 9), and re-take the bar, renew the oscillation, spring again to the first bar, again change front, replace the feet on the ground,

and rise to the first position.

TO REST ON THE SINGLE BAR.

THIRD SERIES.

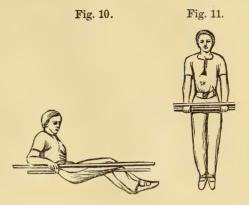
Exercise 10.

Course I.

Position of attention at the centre of the bars.

1. Raise both hands and grasp the bars right and left, the fingers and thumbs meeting.

2. Lift both feet from the ground, and pass them over the left bar, resting on it under the knees, the head and shoulders held back, the trunk of the body sustained; quit the grasp of the left hand, retake it above the bar on the inside, at the same time elevating the elbow, and resting the fore-arm on the bar, the right following (Fig. 10); press from both hands to the



full extension of the arms, and rise seated on the bar.

In descending pass the right hand over to the left bar, reverse the grasp of the left, pass the right hand in front of the body and re-grasp the bar at the distance beyond the left, at the same time quitting the seat and bringing the body round to front the bar (Fig. 11), slowly descend until the feet reach the ground, and quit the grasp of the hands.

This exercise to be repeated on the right bar.

TO REST ON THE DOUBLE BARS.

THIRD SERIES.

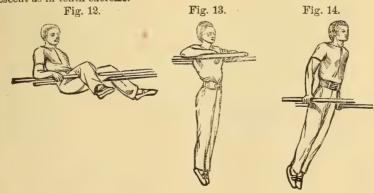
Position as in tenth exercise.

Exercise 11.

1. As in tenth exercise.

COURSE I. 2. Lift both feet from the ground, and pass them by the front over the bars, right and left; change and re-take the grasp of the hands, as in tenth exercise (Fig. 12), and rise seated on the bars.

In descending, pass the right leg over to the left bar, and complete the descent as in tenth exercise.



TO RISE BETWEEN THE BARS AND REST ON THE SINGLE BAR.

THIRD SERIES. Position as in tenth exercise.

Exercise 12. 1. Spring from the ground until the shoulders are above COURSE II. the bars, at the same time bringing the closed hands up to the breasts, spread out the folded arms horizontally, and by them rest on the bars, the chest advanced, the head held back, the lower limbs straight and together, the toes pointed to the ground (Fig. 13).

2. Grasp the bars right and left, press strongly from both hands, lean forward, straighten the arms and rise above the bars resting on the hands' (Fig. 14), elevate the lower limbs and pass them over the left bar, resting on it and on the known and rise sected on the bar as in tenth everying.

it under the knees, and rise seated on the bar as in tenth exercise.

Descend as in tenth exercise.

This exercise to be repeated resting on the right bar.

TO RISE BETWEEN THE BARS AND REST ON BOTH.

THIRD SERIES. Position as in tenth exercise. Exercise 13.

1. As in preceding exercise.

Course II. 2. As in preceding exercise to the rest on the hands above the bars; elevate the lower limbs, pass one over each bar, and riseseated on the bars as in eleventh exercise.

In descending, rest strongly on the hands, raise the lower limbs, repass them over the bars, and bring them to the vertical line between the bars, the legs straight and together, the toes pointed to the ground, the column of the body upright, the head erect, the eyes directed to the front; quit the grasp of the hands, bring the arms close in by the sides, and descend yielding.

TO REST ON THE LEFT BAR AND CLEAR THE RIGHT, BY THE FRONT.

THIRD SERIES. Position as in tenth exercise.

Exercise 14.

1. Spring from the ground until the breast is above the Course IV.

bars, seize both bars right and left, and immediately straighten the arms and come to the rest on the hands above the bars, elevate the lower limbs in position and pass them over the left bar, resting on it under

Fig. 15. the knees.



2. Press strongly with the hands, elevate the lower limbs in position above the bar, sweep them across and clear both bars to the right front (Fig. 15), quit the grasp, and descend yielding, in the line of the bars.

This exercise to be repeated, resting on the right bar and clearing the left.

TO RISE BY THE FIRST BAR AND DESCEND BY THE SECOND.

Third Series. Position as in first exercise 15.

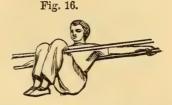
Course III. 1. As in first exercise.
2. Lift both feet from the ground, and pass them over the second bar, resting on it under the knees, the fore-legs pendent,

it under the knees, the fore-legs pendent, the trunk of the body sustained, the head held back; pass the head and shoulders

under the bar and rear them above it, resting on the back of the neck, quit

the grasp of the right hand, bring the arm between the bars, and stretch it along the surface of the first bar, to the right, grasping the bar, the left hand following on the left bar (Fig. 16); gradually bring the hands together, along the bar, behind the back, and rise, seated on the second bar.

In descending, pass the right hand over to the second bar, the left following, reverse the grasp of both hands, elongate the trunk and lower limbs, setting the body free from the bar and resting sustained by the grasp of the hands in front of the bar (Fig. 17); gradually contract the arms, sink beneath the bar, and lower the feet to the ground.







THE TRAPEZIUM.

In importance this machine ranks with the fixed parallel bars, not so much on account of the number of its exercises as from their artistic character, and the power which they possess of testing and increasing the capacity of the trunk and upper limbs.

Every exercise on this machine consists of one or more evolutions of less or greater difficulty, of which the hand-grasp on the rope or the bar, or on both, forms the centre, the entire weight of the body and force of the movement being sustained by it. They all terminate on the spot, and in the position, in which they begin.

The exercises on this machine divide themselves into two series,—in those of the first, the ropes are grasped by either one or both hands; in those of the second, the ropes are carefully avoided and the grasp of the hands is on the bar alone.

From these two series a third is formed, consisting of certain of the exercises of each executed in combination; in one of these combinations, the entire second series can be executed without pause.

The whole of the exercises of the first series may be called double exercises, consisting of one evolution in ascending, and another in descending; those

of the second series, with the exception of the last, are all complete circles in given positions.

All these exercises may be practiced by beginners, the form of each, given in the text, being the perfect one, but capable of modification for initiatory practice. Thus in introducing a beginner to the first exercise, instead of grasping the rope a hand's-breadth above the bar, he may grasp it a foot or even more above the bar, the left hand following close under the right, and then day by day the space between the hands and the bar should be reduced, until these are placed as directed in the text. The same course may be literally followed in the second exercise. In the third and fourth, the initiatory practice may be accompanied by a spring from the ground, which should be gradually lessened until the effort falls entirely upon the upper limbs, as indicated in the text. In the fifth the limbs should be supported and guided by the instructor, this support being gradually withdrawn, until the learner can execute the movements without help.

The exercises of the second series are all arduous, but also admit of gradual approach. In the first, a slight spring may be taken, and both arms and legs allowed to remain bent; the spring may then be dispensed with; next, the legs may remain bent at the commencement, and be extended during the rise: to be followed by the straight leg and bent arm, leading direct to the perfect exercise. In the second exercise the gradations by which it may be approached are less marked; it may be viewed as commencing where the second exercise in the first series terminates, and there is no intermediate practice; nothing but perseverance against repeated failures will overcome the difficulty, for the position is not such as will admit of direct help from the instructor, and all that can be given in this exercise must be but the steadying of the limbs, enabling the learner to hold his own. The fourth and fifth exercise have no gradations on this machine, but may be approached here by practice on others, where, on account of such machines being fixed and firm, they are less difficult. The sixth may be approached by practice on a machine that turns with the hand, such as the Pair of Rings. The seventh is always found to be one of the most difficult on this machine, and requires the greatest care in its execution; the pause in the horizontal line should never exceed a few seconds. The variation of this exercise sometimes performed, of passing from the horizontal line over the bar in position, should never be allowed, as it is in the highest degree dangerous.

The best grasp for the instructor in directing the evolutions on the trapezium is a firm hold of the wrist with the left hand, the right firmly grasping the leg of the trowsers at the ankle.

The position of the instructor should be on the right or left of the machine, facing the learner.

The bar of the trapezium should be 2 feet 6 inches long and $1\frac{1}{2}$ inch in diameter, and suspended at a height of 4 feet 6 inches from the floor.

FIRST SERIES....BY THE ROPES.
SECOND SERIES...BY THE BAR.
THIRD SERIES...COMBINATIONS.

TO RISE BY THE SINGLE ROPE.

FIRST SERIES.

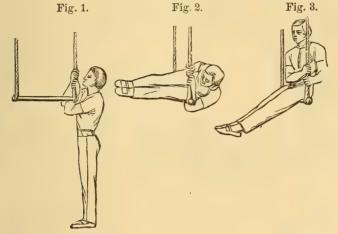
Exercise 1.

COURSE I.

Position of attention, the trapezium in profile on the left

1. Raise the right hand and grasp the rope a hand's breadth

above the bar, the left following in the interspace (Fig. 1).



2. Lift both feet from the ground, the legs straight and together, the toes pointed to the front, and pass them over the bar, elevating the body until the hip rests on its surface (Fig. 2); press downwards with the hands and rise seated on the bar, retaining the grasp of the rope (Fig. 3).

In descending, lean slowly backwards and sidewards, bring the hip again on the bar, remove the lower limbs from it, and come to the first position.

This exercise to be repeated with the trapezium on the right, the left hand uppermost.

TO RISE BY BOTH ROPES.

First Series. Position of attention, facing the trapezium.

Exercise 2.

Course I. Position of attention, facing the trapezium.

1. Raise both hands and grasp the ropes, one in each hand close to the bar.

2. Lift both feet from the ground, and pass them under the bar between the hands, at the same time allowing the head and shoulders to fall backwards and straightening the arms; and by a continuous movement bend the back inwards, and extend the lower limbs upwards (Fig. 4), bending the arms until the hips are as high as the bar; slowly let the feet descend to the front, and at the same time and at the same pace let the trunk, shoulders, and head ascend, and come to the seat on the bar, retaining the grasp. During this last movement let the chin be elevated, the shoulders pressed back, the breast advanced square to the front.



In descending, lower the body from the bar backwards, let the lower limbs fall to the rear, re-pass the feet under the bar, and come to the first position.

TO RISE BY THE BACK LIFT.

FIRST SERIES.
Exercise 3.
Course I.

Position as in second exercise.

1. Raise the right hand to the reach and grasp the rope, raise the left hand and grasp the bar at its centre.

Fig. 5.





2. Lift both feet from the ground, the toes pointed downwards, by the flexion of the right arm and the extension of the left, and rise until the face is as high as the right hand, the left arm straight above the hand grasping the bar (Fig. 5); turn to the right, the back to the bar, and sit in the space between the left hand and the right rope (Fig. 6), retaining the grasp.

In descending, raise the body and return the face to the bar, lower the body slowly to the ground.

This exercise to be repeated with the left hand on the rope.

TO RISE BY THE FRONT LIFT.

Fig. 7.

FIRST SERIES.

Position as in second exercise.

1. As in third exercise.

COURSE II. 2. As in third exercise until the left arm is straight above the bar, Fig. 5; raise the feet and pass them over the bar through the space between the left hand and the right rope (Fig. 7), extend the legs, point the toes to the front, and come to the seat on the bar, retaining the grasp.

In descending, withdraw the feet through the interspace, and slowly lower them to the ground.

This exercise to be repeated with the left hand on the rope.

TO TURN ROUND THE ROPES, RIGHT AND LEFT.

FIRST SERIES.
Exercise 5.
Course II.

Position as in second exercise.

1. As in third exercise.

As in fourth exercise to the seat on the bar.

- 3. Raise the left hand from the bar and grasp the right rope as high as the face, slip the right hand down to the bar, and grasp it close to the rope with the thumb to the front, the fingers to the rear; lift the body from the bar, pass round the outside of the right rope, the feet leading (Fig. 8), pass the lower limbs between the ropes, and again come to the seat on the bar.
- 4. Repeat the movement round the left rope, reversing the respective positions of the hands.

 Descend as in fourth exercise.



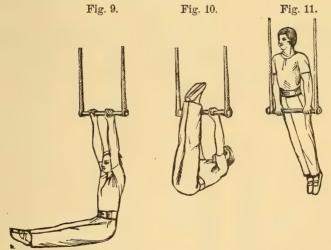
TO TURN ROUND THE BAR FORWARDS.

SECOND SERIES. Position as in second exercise.

Exercise 6.

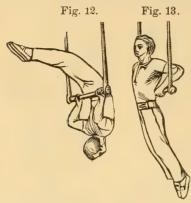
1. Raise both hands and grasp the bar, the hands at Course III.

the distance, the backs of the hands upwards, the fingers and thumbs meeting; extend the lower limbs to the front, at the same time sinking to the reach of the hands; the legs together and straight, the feet together with the toes pointed to the front (Fig. 9).



2. Lift the feet from the ground, the lower limbs in position, the arms remaining perfectly straight, until the feet are as high as the bar (Fig. 10); bend the arms, and at the same time elevate the body until the waist is as high as the bar, pass the lower limbs over the bar, the trunk following, revolving on the waist (Fig. 11), lower the body, completing the circle, and slowly descend until the feet meet the ground; relinquish the grasp of the hands.

TO TURN ROUND THE BAR BACKWARDS.



SECOND SERIES. Exercise 7. Course III.

Position as in second exercise. 1. As in sixth exercise.

2. As in sixth exercise, until the feet are as high as the bar (Fig. 10); pass the feet under the bar between the hands, and by a continuous movement bend the back inwards and extend the lower limbs upwards. bending the arms until the waist is as high as the bar (Fig. 12), let the lower half of the body slowly fall to the front, and as it descends let the upper half ascend in position,

the head well thrown back, and sink slowly down, the back touching the bar (Fig. 13), until the feet meet the ground; relinquish the grasp of the hands.

TO TURN ROUND THE BAR BACKWARDS, AND RETURN.

SECOND SERIES.

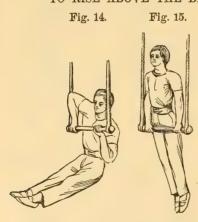
Position as in second exercise.

Exercise 8.

1. As in sixth exercise.

Course III. 2. As in preceding exercise to its completion, but at this point, instead of relinquishing the grasp, press from the hands, straighten the arms, bending the back inwards, and rise to the seat on the bar; slowly let the head and shoulders fall to the rear, repass the feet under the bar, straighten the legs, lower the body, and return to the first position.

TO RISE ABOVE THE BAR, RIGHT AND LEFT.



SECOND SERIES. Position as in second exercise. Exercise 9. Course III.

1. As in sixth exercise.

2. Lift both feet from the ground, bend the arms until the breast is as high as the bar, press strongly with the right hand upon the bar and raise the fore-arm vertically above it (Fig. 14); repeat the movement with the left hand, complete the extension of both arms, and come to the upright position, resting on the bar (Fig. 15).

In descending, re-bend the right arm, and pass it below the bar, the

left following, lower the body and come to the first position.

This exercise to be repeated left and right.

Fig. 16.

TO RISE ABOVE THE BAR, BOTH HANDS AT ONCE.

SECOND SERIES. Exercise 10.

Position as in second exercise.

1. As in sixth exercise.

COURSE IV.

2. Lift both feet from the ground,

bend the arms until the breast is as high as the bar, press strongly upon the bar with both hands at once and rise above it (Fig. 16), completing the extension of the arms, and come to the upright position, resting on the bar, as in Fig. 15.

This series of movements to be executed without pause, and at the same pace throughout.

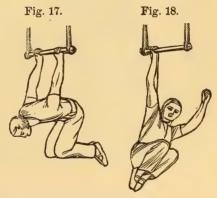
In descending, re-bend the arms, pass them below the bar, and come to the first position.



SECOND SERIES. Position as Exercise 11. in second ex-Course IV. ercise.

1. As in sixth exercise.

2. As in sixth exercise, until the feet are as high as the bar (Fig. 10); pass the feet under the bar between the hands, and let them descend close to the ground, but without touching it (Fig. 17); quit the grasp of the left hand, at the same time folding the lower limbs close under the body. and swinging round by the right, make a complete turn laterally,



and again come to the front (Fig. 18), re-grasp the bar with the left hand, extend the legs, again raise the feet to the bar and re-pass them under it, quit the grasp with the right hand, swinging round by the left, re-grasp the bar with the right hand, extend the legs and come to the first position.

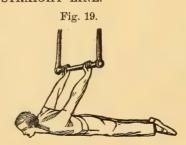
TO FORM THE STRAIGHT LINE.

SECOND SERIES. Exercise 12. Course IV.

Position as in second exercise.

1. As in sixth exercise.

2. As in preceding exercise until the feet are passed under the bar, at this point extend the legs to the rear and pause, forming a perfectly horizontal line from head to foot, suspended by the arms under the



bar (Fig. 19) relax the extension, re-pass the feet under the bar, extend the legs to the front, and come to the first position.

THIRD SERIES. COMBINATIONS.

The following exercises should be combined and executed without pause, as soon as the separate exercises composing them can be performed singly.

COMBINATIONS OF TWO EXERCISES.

- Nos. 2-5. To rise by both ropes—to turn round the ropes, right and left.
- To rise by the front lift-to turn round the ropes, right and left. Nos. 4-5.
- Nos. 6-8. To turn round the bar forwards—to turn round the bar, backwards and return.
- Nos. 6-10. To turn round the bar forwards-to rise above the bar, both hands at once.
- Nos. 6-11. To turn round the bar forwards-to turn under the bar on one hand.
- Nos. 6-12. To turn round the bar forwards—to form the straight line.
- Nos. 8-10. To turn round the bar backwards and return—to rise above the bar, both hands at once.
- Nos. 8-11. To turn round the bar backwards and return—to turn under the bar on one hand.
- Nos. 8-12. To turn round the bar backwards and return-to form the straight line.
- Nos. 10-11. To rise above the bar both hands at once—to turn under the bar on one hand.
- Nos. 11-T2. To rise above the bar both hands at once-to form the straight

COMBINATIONS OF THREE EXERCISES.

Nos. 6-8-10. To turn round the bar forwards-to turn round the bar backwards and return—to rise above the bar, both hands at once.

To turn round the bar forwards—to rise above the bar, both

- Nos. 6-10-11. hands at once—to turn under the bar on one hand.
- Nos. 6-10-12. To turn round the bar forwards-to rise above the bar both hands at once-to form the straight line.
- To turn round the bar forwards—to turn under the bar on one Nos. 6-11-12. hand-to form the straight line.
- To rise above the bar both hands at once-to turn round the Nos. 10-8-12. bar backwards and return-to form the straight line.
- Nos. 8-11-12. To turn round the bar backwards and return-to turn on one hand under the bar-to form the straight line.
- To turn round the bar backwards and return -to turn under Nos. 8-11-10. the bar on one hand-to rise above the bar both hands at once.

COMBINATIONS OF FOUR EXERCISES.

- Nos. 6-8-10-11. To turn round the bar forwards—to turn round the bar backwards and return—to rise above the bar both hands at once—to turn under the bar on one hand.
- Nos. 6-10-11-12. To turn round the bar forwards—to rise above the bar both hands at one—to turn under the bar on one hand—to form the straight line.
- Nos. 8-10-6-12. To turn round the bar backwards and return—to rise above the bar both hands at once—to turn round the bar forwards—to form the straight line.
- Nos. 10-8-11-6. To rise above the bar both hands at once—to turn round the bar backwards and return—to turn under the bar on one hand—to turn round the bar forwards.

COMBINATIONS OF FIVE EXERCISES.

- Nos. 6-8-10-11-12. To turn round the bar forwards—to turn round the bar backwards and return—to rise above the bar both hands at once—to turn under the bar on one hand—to form the straight line.
- Nos. 8-10-6-11-12. To turn round the bar backwards and return—to rise above the bar both hands at once—to turn round the bar forwards—to turn under the bar on one hand—to form the straight line.
- Nos. 10-8-6-10-12. To rise above the bar both hands at once—to turn round the bar backwards and return—to turn round the bar forwards—to rise above the bar both hands at once—to form the straight line.

THE PAIR OF RINGS.

This machine is similar in character to the trapezium, giving a wide course of exercises, passing from the most simple to the most arduous. Like the exercises of the trapezium, they powerfully address themselves to the trunk, especially its upper region, and to the arms. They all terminate on the spot, and in the position, in which they begin. They also may be divided into two series, although these are not so clearly defined as those of the first-named machine; the first series comprises all exercises of EVOLUTION, single or double, with arms bent or straight; the second, all those RISING TO, or ABOVE the rings.

With this machine also, the exercises are all given in the text in their perfect form, and allow of gradual approach through less difficult movements and positions. The first and second may be begun not only while standing upright and with the arms bent, but a spring may be taken with the feet to assist in the elevation of the lower limbs, and the knees may remain bent both in the ascent and descent, to front and rear; these modifications of the exercise being gradually relinquished as the body acquires strength, until it can be executed in its perfect form. The first part of the third exercise may be

similarly modified, but its distinguishing feature, that of turning the body while the feet remain in the rings, must always be executed slowly, the back sinking gradually, with every joint of the spine sharing equally in the depression, and the chest gradually rounding and expanding under the same influence.

In the second series, the first, second, and third exercises lead direct to each other, and these may be modified, first, by being begun from the erect standing position, and next from the kneeling position.

The last exercise is very difficult, and the same care and restrictions which are directed for the corresponding one on the trapezium are necessary here.

In all evolutions on this machine the instructor should grasp the right wrist of the learner with one hand, and as soon as the feet have passed the rings, he should with the other govern the lower limbs in their descent. While the body is turning with the feet in the rings, the instructor should pass his left arm under the waist of the learner to limit the extent of its descent, always retaining his grasp of the wrist. In the turn with the hands (right and left) the instructor should grasp the right wrist of the learner, and gradually lower him until his entire weight is on the left, and vice versa, always grasping the hand that is to relinquish the hold of the ring.

The position of the instructor should be the same as with the trapezium.

The Pair of Rings should be five inches in diameter, fixed eighteen inches apart, and suspended at a height of five feet six inches from the floor.

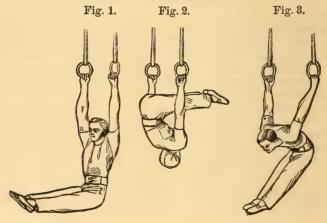
FIRST SERIES.....EVOLUTIONS.
SECOND SERIES.....RISING BETWEEN THE RINGS.
THIRD SERIES.....COMBINATIONS.

THE SINGLE CIRCLE.

FIRST SERIES.
Exercise 1.
Course I.

Position of attention between the rings.

1. Raise both hands and grasp the rings, one in each hand, lower the body to the reach of the hands and pass



both feet to the front, the legs together and straight, the feet together, the

toes pointed to the front (Fig. 1).

2. Lift both feet from the ground, and pass them between the rings, the arms and legs straight throughout (Fig. 2); slowly descend to the ground, completing the circle (Fig. 3), and relinquish the grasp.

THE DOUBLE CIRCLE.

First Series. Position as in first exercise.

Exercise 2. 1. As in first exercise.

Course I. 2. As in first exercise to the completion of the single circle, but instead of relinquishing the grasp of the hands, return between the rings and come to the first position, retaining the arms and legs straight throughout. Bend the arms, replace the feet upon the ground under the rings, and quit the grasp.

TO TURN WITH THE FEET IN THE RINGS.

First Series. Position as in first exercise.

Exercise 3. 1. As in first exercise.

COURSE I. 2. As in first exercise to the half-circle (the feet between the rings), separate the feet right and left and insert each in its respective ring.

3. Resume with the trunk of the body the action of the circle, slowly separating the knees, lowering and arching the back and raising the head (Fig. 4).

4. Re-raise the trunk to its position at the half-circle, remove the feet from the rings, straighten the legs, point the toes upwards and let them gradually

Fig. 4.

descend to the front, the arms straight, and come to the first position.

TO TURN ON ONE HAND RIGHT AND LEFT.

FIRST SERIES. Position as in first exercise.

Exercise 4. 1. As in first exercise.

Course III. 2. As in first exercise to the completion of the single circle, but instead of relinquishing the grasp with both hands, retain the grasp of the right, passing the left arm down by the side, and folding the lower limbs under the body.

3. Make a complete turn laterally from left to right, re-grasp the ring with the left hand (Fig. 5), and extend the lower limbs to the front as in first position,

4. Re-pass the feet between the rings, repeat the turn from right to left retaining the grasp of the left hand, re-grasp the ring with the right, extend the lower limbs to the front and come to the position.

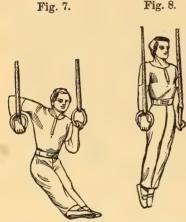


TO EXTEND THE ARMS RIGHT AND LEFT.



SECOND SERIES. Position as in first exercise. Exercise 5. 1. As in first exercise. Course II. 2. Bend the arms until the hands are at the rest, raising the lower limbs in position; sustain the body on the left hand (retaining it close by the side), extend the right arm holding the ring at the full length of the arm (Fig. 6), pause, and return the right hand to the side; repeat the extension with the left arm. pause, return it to the side, lower the body and come to the position.

TO RISE ABOVE THE RINGS RIGHT AND LEFT.



SECOND SERIES. Position as in Exercise 6. first exercise. Course III. 1. As in first exercise.

2. Bend the arms until the hands are at the rest, raising the lower limbs in position, press strongly on the ring with the right palm, raising the forearm vertically above the ring (Fig. 7), repeat the movement on the left, press strongly with both hands, straighten the arms completely above the rings and pause (Fig. 8); the chest fully advanced, the head held back, the chin elevated, the legs straight and together, the toes pointed to the ground.

In descending, re-bend the right arm.

the left following, re-pass the right below the ring, the left following, lower the body and come to the position.

This exercise to be repeated with the left hand leading.

TO RISE ABOVE THE RINGS BOTH HANDS AT ONCE.

SECOND SERIES.

Position as in first exercise.

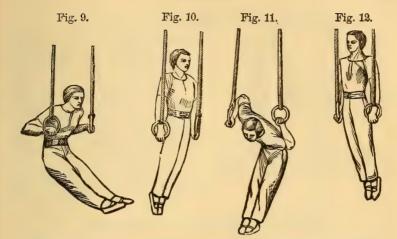
Exercise 7.

1. As in first exercise.

2. As in preceding exercise until the hands are at the Course IV. rest, instantly press strongly on the rings with both hands, and raise both arms vertically above the rings (Fig. 9), and rise above the rings to the full extension of the arms (Fig. I0); the transition from the bent to the extended position of the arms taking place without pause.

In descending, re-bend both arms at once, pass them below the rings, lower

the body and come to the position.



TO RISE ABOVE THE RINGS BACKWARDS, RIGHT AND LEFT.

SECOND SERIES. Position as in first exercise.

Exercise 8. 1. As in first exercise.

COURSE IV. 2. As in first exercise to the completion of the single circle; elevate the right side, lean slightly forward, press strongly with the right hand, and raise the fore-arm vertically above the ring (Fig. 11), repeat the movement on the left, press strongly with both hands, and rise above the rings as in seventh exercise (Fig. 12).

Descend as in seventh exercise.

This exercise to be repeated with the left hand leading.

TO RISE ABOVE THE RINGS BACKWARDS, BOTH HANDS AT ONCE.

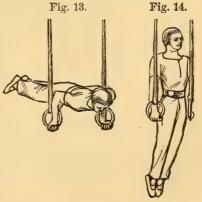
SECOND SERIES
Exercise 9.
COURSE IV.

Position as in first exercise.

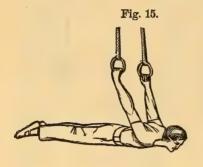
1. As in first

exercise.

2. Lift both feet from the ground and pass them between the rings, and at the same time rapidly bend the arms, raising the body between the rings until the hands are close at the sides, instantly press with both hands and raise the fore-arms vertically above the rings (Fig. 13), straighten the arms, continue the movement of the circle with the lower limbs, and let the body rise between the rings in the position of seventh exercise (Fig. 14).



TO FORM THE STRAIGHT LINE BACKWARDS.



SECOND SERIES. P Exercise 10. first Course IV. 1.

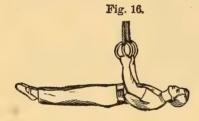
Position as in first exercise.

1. As in first exercise.

2. As in first exercise to the half circle (Fig. 2), but instead of lowering the feet to the ground, extend them to the rear until the lower limbs and trunk form one perfect horizontal line (Fig. 15).

Relax the extension of the lower limbs, let the feet descend to the rear, and come to the position.

TO FORM THE STRAIGHT LINE FORWARDS.

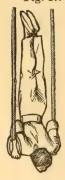


SECOND SERIES. Position as in Exercise 11. Course IV. 1. Raise both hands and grasp the rings; raise the lower limbs to the front in position, the toes pointed to the front, and allowing the head and shoulders to fall to the rear, the arms slightly bent, until the lower limbs and trunk form one

Relax the-extension, let the feet descend to the ground and come to the position.

Fig. 17.

TO STAND ABOVE THE RINGS.



SECOND SERIES.

Exercise 12

Course IV.

Position as in first exercise.

1. Rise above the rings as in seventh exercise (Figs. 9 and 10).

perfect horizontal line (Fig. 16).

2. Incline the head and shoulders to the front, bending the arms and pressing them close in by the sides, and at the same time raise the lower limbs in position by the rear until they are above the head, forming with the trunk of the body one perfect vertical line between the rings (Fig. 17).

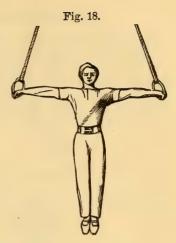
Relax the extension, bring the lower limbs down by the front to the ground and come to the position.

TO STAND BELOW THE RINGS.

SECOND SERIES. Position as in first exercise 13.

Course IV. 1. Rise above the rings as in seventh exercise (Figs. 9 and 10).

2. Slowly let the whole body descend in position between the rings, at the same time extending the arms perfectly straight right and left, strongly pressing downwards with the palms, until the arms are at right angles with the body (Fig. 18); relax the extension and slowly lower the feet to the ground, and come to the position.



THIRD SERIES.

COMBINATIONS.

When all or most of these exercises can be performed singly, two, three, or more of them should be combined and executed without pause. The following are some of the combinations which may be made, and others can be formed at discretion.

COMBINATIONS OF TWO EXERCISES.

Nos. 2-3. The double circle—to turn with the feet in the rings.

Nos. 2-4. The double circle—to turn on one hand right and left.

Nos. 2-6 or 7. The double circle—to rise above the rings backwards.

Nos. 2-8. The double circle—to rise above the rings.

The double circle—to form the straight line backwards.

COMBINATIONS OF THREE EXERCISES.

Nos. 2-4-5. The double circle—to turn on one hand right and left—to extend the arms right and left.

Nos. 2-7-4. The double circle—to rise above the rings—to turn on one hand right and left.

Nos. 2-8-7. The double circle—to rise above the rings backwards—to rise above the rings both hands at once.

Nos. 2-7-12. The double circle—to rise above the rings both hands at once—to form the straight line above the rings.

COMBINATIONS OF FOUR EXERCISES.

- Nos. 2-7-4-10. The double circle—to rise above the rings both hands at once—to turn on one hand right and left—to form the straight line.
- Nos. 2-7-12-3. The double circle—to rise above the rings both hands at once—to form the straight line above the rings—to turn with the feet in the rings.
- Nos. 7-12-2-10. To rise above the rings—to form the straight line above the rings—the double circle—to form the straight line backwards.

COMBINATIONS OF FIVE EXERCISES.

- Nos. 2-7-4-10-12. The double circle—to rise above the rings both hands at once—to turn on one hand right and left—to form the straight line backwards—to form the straight line above the rings.
- Nos. 7-12-3-5-11. To rise above the rings both hands at once—to form the straight line above the rings—to turn with the feet in the rings—to extend the arms right and left—to form the straight line forwards.

THE ROW OF RINGS.

The single exercise on this machine is a very simple one, and if the proper elevation of the rings from the floor be preserved, it may be safely practiced without supervision, or at most with that of a monitor. It is not the less valuable on this account, but, on the contrary, it has a special object which it shares with the exercises of the next machine, viz., the equalization in strength and development of the two sides of the upper half of the body, and of the arms; for it necessitates that only one side can work at a time, and that the amount of exertion will be the same for each side, and that therefore the weaker side will actually do more, being the weaker, and consequently by the unerring law of development being in relation to activity, it will in time overtake and rank with its fellow in development and capacity.

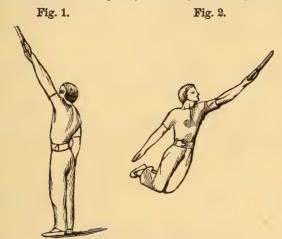
The row of rings should consist of not less than five or six rings similar to those described for the preceding machine, and there may with advantage be a greater number, if the length of the gymnasium will admit of it. They should be suspended at a height of not less than six feet three inches from the floor, and at equal distances apart, the distances in each case depending on the facilities offered by the building for attaching the ropes; but the distance apart should not be less than eight feet or more than ten feet, and the point to which the ropes are hung should never exceed twenty feet above the floor.

SINGLE SERIES.

THE SWING.

SINGLE SERIES. Position of attention, facing the first ring, the back to the row.

COURSE II. 1. Raise the left hand and grasp the ring (Fig. 1), advance with short and rapid steps and spring from the ground at the end of the run, from the left foot, turn quickly to the right, bending the lower limbs



at the knees and pointing the toes to the rear, the head erect, the breast advanced (Fig. 2); on approaching the Fig. 3.

advanced (Fig. 2); on approaching the second ring extend the right hand and grasp it, and, while retaining it lightly in the hand, return to the farthest point of the backward oscillation on the ring grasped by the left (Fig. 3); at this point quit the grasp of the left, withdrawing the hand lightly and leaving the ring motionless, turn to the right and bring the left hand in a full sweep round by the thigh, the arm quit straight and fingers pointed downwards, describing a half circle in the sweep, extend it to the front, and grasp the next ring. Repeat. On grasping the last ring turn quickly round, facing the row, and descend yielding.



THE ELASTIC LADDER.

The exercises on this machine resemble in character that on the row of rings, and have the same object, i. e., the equalization of the arms and upper part of the body; they are two in number, the second being but a more advanced and dexterous mode of performing the first. They are several degrees more difficult than that on the row of rings, the machine being firm, and the whole weight of the descent in the oscillation coming upon the sustaining hand. They are, however, always favorites, and when the ladder is well arranged and perfectly secure in its vertical straps and horizontal fasten ings, and a class of men pass along it, each taking the spar as it is relinquished by his predecessor, there is no more effective exercise in the Gymnasium.

Short distances, consisting of a few spars only, should be attempted at first, and with beginners only one should be passed along the ladder at a time, the instructor walking by his side, giving directions and explanations as each step is made.

The elastic ladder should be suspended at a height of eight feet six inches from the floor; the width of the ladder should be fifteen inches, the spars nine inches apart. It may be of any length beyond thirty feet.

SINGLE SERIES.

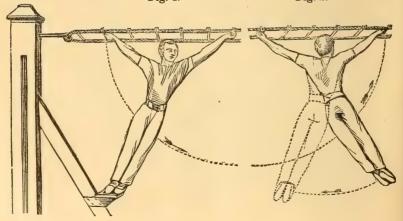
THE SINGLE STEP.

SINGLE SERIES. Position of attention under the ladder, facing the standard.

COURSE III. 1. Ascend to the step and with the right hand grasp the first spar, the fingers and thumb meeting, face to the left, lean forward, fully extend the left arm and grasp the spar nearest the hand, the palm facing the range of the ladder (Fig. 1).



Fig. 2.



2. Lift both feet from the step, and in their fall let them swing as far as the advanced hand, the head erect, the legs straight and together, the toes pointed to the ground; on the return oscillation towards the right, quit the grasp with the right hand, and bring it in full sweep (the arm quite straight) round by the thigh (the body turning at the same time), extend it to the front and grasp the nearest spar (Fig. 2); again let the trunk and lower limbs fall to the rear until they are under the left hand (as shown by dotted lines on Fig. 2), quit the grasp with the left hand, pass it round by the thigh (the body turning), and complete the movements of the step. Repeat.

At the completion of the last step, steady the body, bring it to the vertical

position, quit the grasp with both hands, and descend yielding.

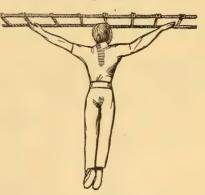
THE DOUBLE STEP.

Single Series. Position as in preceding exercise.

Exercise 2. 1. As in preceding exercise.

Course IV. 2. As in preceding exercise to the forward oscillation,

but instead of retaining the grasp of the left hand while the right passes to another spar, quit the grasp of the left (Fig. 3), thus allowing the forward oscillation to enable the right hand to grasp a spar in advance of that which it could have grasped had the left retained its hold; the exercise thus consisting of a succession of leaps, without pause, only one hand ever being on the ladder at one time, and towards the terminating movement of each step, both hands being free (Fig. 3). Repeat.



On grasping the last spar, sweep the disengaged hand rapidly round by the thigh, make a complete turn with the body, quit the grasp and descend yielding.

THE HORIZONTAL BAR.

THE exercises on this machine are very valuable, for two distinct reasons; first from their own intrinsic value; second, from the circumstance that they are capable of being executed by an entire class at the same time, all obeying the same word of command. They naturally divide themselves into two series, the first consisting of all those on the bar in its natural form, ranking in character and value with those of the two last-mentioned machines; the

second, of all those in which the body is elevated UP TO and ABOVE the bar, by the flexion and extension of the arms; the learner rising either on the side on which he began the exercise, or passing round the bar by the action of the trunk, and resting on its surface. These resemble in nature and purpose certain exercises of the second series on the trapezium.

As is always the case with exercises performed by a number of men at the same time, a stricter discipline must be preserved, with a closer observance of time. The more complex exercises should all be practiced by the learners separately.

The position of the instructor should vary. In the first series it should be as with the two last machines; in the second series, as with the corresponding exercises on the trapezium, except when executed by a class, when it should be to the front, and opposite the centre of the bar.

The horizontal bar should be of wrought iron 1½ inch in diameter, and fixed at a height of eight feet from the floor. It may be of any length beyond 20 feet.

FIRST SERIES....TRAVELLING.

SECOND SERIES....RISING TO AND ABOVE THE BAR.

RIGHT HAND LEADING.

FIRST SERIES.

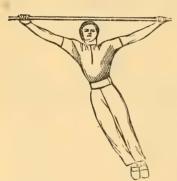
Exercise 1.

Course I.

Position of attention facing the bar.

1. Spring from the ground and grasp the bar, the hands at the distance, the fingers and thumbs together,

Fig. 1.



the arms straight, the trunk of the body upright, the legs straight and together, the feet together, the toes pointed to the ground.

2. Advance the right hand to its farthest reach along the bar, at the same time passing the lower limbs in position to the left until the feet are under the left hand (Fig. 1); quit the grasp of the left hand and immediately pass it along the bar to the right, at the same time allowing the lower limbs and trunk to swing to the right until they are under the right hand, again advance the right hand to the reach and repeat the movements of the step.

Repeat.

On the completion of the last step, resume the first position, quit the grasp with both hands, and descend yielding.

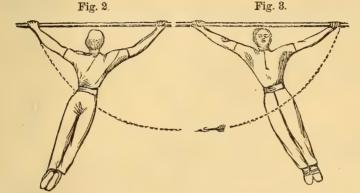
This exercise to be repeated with the left hand leading.

RIGHT AND LEFT.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

Course II. 2. Advance the right hand to its farthest reach along the bar, at the same time pass the lower limbs in position to the left until the feet are under the left hand (Fig. 2), quit the grasp of the left hand, letting



the body and lower limbs fall to the left, let the left hand sweep round by the thigh in a half circle, and grasp the bar at a full reach beyond the right, at the same time making a complete turn of the body, and continuing the oscillation of the lower limbs until the feet are under the left hand (Fig. 3). Again pass the lower limbs to the left, quit the grasp of the right hand and complete the movements of the step. Repeat.

Descend as in first exercise.

RIGHT AND LEFT, BACKWARDS.

FIRST SERIES. Position as in first exercise.

Exercise 3. 1. As in first exercise.

COURSE II. 2. Advance the right hand to its farthest reach along the bar, quit the grasp of the left hand, but instead of passing it round by the front, as in preceding exercise, let it fall by the rear and grasp the bar at the full reach beyond the right, the body making a complete turn backwards during the step. Repeat with the left and right alternately.

Descend as in first exercise.

This exercise to be repeated turning backwards and forwards-at-alternate steps.

RIGHT HAND LEADING.

(THE ARMS BENT.)

First Series. Position as in first exercise.

Exercise 4. 1. As in first exercise.

COURSE II. 2. Bend the arms to the half reach, the chin rising above the bar (Fig. 4), advance the left hand up to the right, advance the right the distance of the step, retaining the trunk and lower limbs in position. Repeat.

At the completion of the last step, sink to the extension of the arms, and descend yielding.

This exercise to be repeated with the left hand leading.

BOTH HANDS AT ONCE.

(THE ARMS BENT.)

FIRST SERIES.

Position as in first exercise.

Exercise 5.

1. As in first exercise.

Course II. 2. Bend the arms to the half reach,

the chin rising above the bar, spring from both hands at once the distance of the step, retaining the arms bent and the trunk and lower limbs in position. Repeat.

Descend as in preceding exercise.

RIGHT HAND LEADING, SIDEWAYS.

(THE LEGS PENDENT.)

FIRST SERIES. Position of attention, facing Exercise 6. the line of the bar.

COURSE I. 1. Spring from the ground and grasp the bar with both hands, the right in advance of, but close to the left, the fingers and thumbs meeting; bend the arms until the head rises above the bar on the right side, and the left shoulder is immediately under the bar, the lower limbs straight and together and the toes pointed downwards (Fig. 5).

2. Advance the right hand the distance of the step, the left following, retaining the trunk and lower limbs in position. Repeat.

At the completion of the last step, sink to the extension of the arms, and descend yielding.

This exercise to be repeated with the left hand leading, the head on the left of the bar.





HAND OVER HAND, SIDEWAYS.

(THE LEGS PENDENT.)

FIRST SERIES. Position as in sixth exercise.

Exercise 7. 1. As in sixth exercise.

Course II. 2. Pass the left hand over the right the distance of the step, advancing the body until the right breast is at the right arm, pass the right hand over the left, advancing the body until the left breast is at the left arm. Repeat, retaining the trunk and lower limbs in position throughout.

Descend as in sixth exercise.

BOTH HANDS AT ONCE, SIDEWAYS.

(THE LEGS PENDENT.)

FIRST SERIES. Position as in sixth exercise.

Exercise 8. 1. As in sixth exercise.

COURSE III. 2. Spring to the front with both hands at once the distance of the step, retaining the trunk and lower limbs in position. Repeat.

Descend as in sixth exercise.

RIGHT HAND LEADING, SIDEWAYS.

(THE LEGS BENT.)

FIRST SERIES. Position as in sixth exercise.

Exercise 9. 1. As in sixth exercise, except that the Course I. lower limbs are bent at the knee, the feet to the rear, the toes pointed to the rear (Fig. 6.)

2. Advance the right hand the distance of the step, the left following, retaining the trunk and lower limbs in position. Repeat.

At the completion of the last step, sink to the extension of the arms, lower the feet, and descend yielding.

This exercise to be repeated with the left hand leading, the head on the left of the bar.

HAND OVER HAND, SIDEWAYS.

(THE LEGS BENT.)

FIRST SERIES. Position as in sixth exercise.

Exercise 10. 1. As in ninth exercise.

COURSE II. 2. Pass the left hand over the right the distance of the step, pass the right hand over the left the same distance, retaining the trunk and lower limbs in position. Repeat.

Descend as in ninth exercise.

9a



BOTH HANDS AT ONCE, SIDEWAYS.

(THE LEGS BENT.)

FIRST SERIES. Position as in sixth exercise.

Exercise 11. 1. As in ninth exercise.

COURSE III. 2. Spring to the front with both hands at once the distance of the step, retaining the trunk and lower limbs in position. Repeat.

Descend as in ninth exercise.

RIGHT HAND LEADING, SIDEWAYS.

(THE LEGS UP.)



FIRST SERIES. Position as in sixth Exercise 12.

COURSE III. 1. As in sixth exercise, except that the lower limbs are extended to the front in a horizontal line under the bar, the column of the body held firm and upright, the head held back (Fig. 7).

2. Advance the right hand the distance of the step, the left following, retaining the trunk and lower limbs in position. Repeat.

At the completion of the last step, sink to the extension of the arms, lower the feet, and descend yielding.

This exercise to be repeated with the left hand leading.

HAND OVER HAND, SIDEWAYS.

(THE LEGS UP.)

FIRST SERIES. Position as in sixth exercise.

Exercise 13. 1. As in twelfth exercise.

COURSE IV. 2. Pass the left hand over the right the distance of the step, pass the right hand over the left the same distance, retaining the trunk and lower limbs in position. Repeat.

Descend as in twelfth exercise.

BOTH HANDS AT ONCE, SIDEWAYS.

(THE LEGS UP.)

FIRST SERIES. Position as in sixth exercise.

Exercise 14. 1. As in twelfth exercise.

COURSE IV. 2. Spring to the front with both hands at once the distance of the step, retaining the trunk and lower limbs in position. Repeat.

Descend as in twelfth exercise.

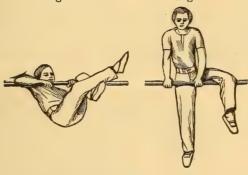
TO RISE ABOVE THE BAR, THE RIGHT LEG ACTING.

SECOND SERIES. Position as in sixth exercise.

Exercise 15. 1. Spring from the ground and grasp the bar with both Course II. hands, right and left of the bar, the left in advance, the fingers and thumbs meeting.

2. Bend the arms, lift the lower limbs, separating the feet as they rise, pass the left leg over the bar, resting on it under the knee, pass the right leg over the left, the calf of the right overlying the instep of the left, the head held back, the trunk sustained.

3. Quit the grasp of the right hand, pass it under the bar to the opposite side next the body and grasp the bar, elevate the elbow and rest the fore-arm along the bar (Fig. 8); detach the right leg from the left, straighten it and Fig. 8.



rapidly pass it under the bar, with a momentum sufficient to enable the body to rise above it, press strongly with both hands, extend the arms, advance the left leg, and rest above the bar (Fig. 9).

In descending, re-bend the right arm, draw back the left leg, lower the body, and place the right leg over the left as in the ascent; sustain the body, detach the legs from the bar, straighten the arms, and descend yielding.

This exercise to be repeated with the left leg acting, the right hand in advance, the right leg resting on the bar.

TO TURN ROUND THE BAR.

SECOND SERIES. Position as in first exercise.

Exarcise 16. 1. As in first exercise, the fingers Course III. and thumb meeting.

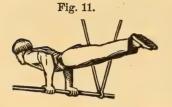
2. Lift the lower limbs in position to the front until the feet are as high as the bar, retaining the arms straight (Fig. 10); bend the arms, carry the feet and lower limbs over the bar, letting the upper part of the body pass under and up the side of the bar and over its surface, while the lower part ascends, passes its surface, and descends to the rear, until the whole body has cleared the bar, and rests in

Fig. 10.



a perfectly vertical line on the hands, above the bar, the arms extended. In descending, set the body free from the bar, straighten the arms, and descend yielding.

TO TURN ROUND THE BAR, THE HANDS REVERSED.



SECOND SERIES. Position as in Exercise 17. first exercise.

COURSE III. 1. As in preced-

COURSE III. 1. As in preceding exercise, but with the grasps of the hands reversed.

2. As in preceding exercise, retaining the reversed grasp of the hands.

In descending, bring the elbows close in by the sides, tighten the grasp of the

hands, slowly incline the head and shoulders to the front, elevate the lower limbs to the rear, sustaining the body upon the fore-arms (Fig. 11); return over the bar, passing the body again under it, bring the lower limbs to the vertical line, and descend yielding.

Fig. 12.



TO RISE TO THE BAR.



SECOND SERIES. Exercise 18. COURSE I. Position as in first exercise.

1. As in sixteenth exercise (Fig. 12).

2. Bend the arms, raising the body until the chin rises above the bar (Fig. 13), sink again to the full extension of the arms, quit the grasp, and descend yielding.

This exercise to be repeated with the lower limbs extended horizontally to the front.

This exercise should be carried into the second, third, and fourth courses by rising to the bar three, six, nine, twelve, or more times consecutively and without pause, according to the capacity of the learner.

TO RISE TO THE BAR, THE HANDS REVERSED.

SECOND SERIES. Exercise 19.
Course I.

Position as in first exercise.

1. As in preceding exercise, except that the grasp of the hands is reversed.

2. As in preceding exercise.

This exercise to be repeated and varied as directed for preceding exercise.

TO RISE ABOVE THE BAR BY THE FORE-ARM, RIGHT AND LEFT.

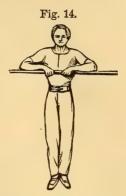
SECOND SERIES. Exercise 20. Course II.

Position as in first exercise.

1. As in sixteenth exercise. 2. Bend the arms until the chin rises above the bar, raise the right elbow and extend the fore-arm along the surface of the bar, the left following on the left (Fig. 14), press strongly with the hands, straighten the right arm to its full extension, the left following, and remain sustained

In descending, let the left fore-arm return to the bar, the right following, pass the left beneath the bar, the right following, quit the grasp, and descend yielding.

by the hands, in the vertical line, above the bar.



TO RISE ABOVE THE BAR BY THE FORE-ARM, BOTH HANDS AT ONCE.

SECOND SERIES. Exercise 21.

Position as in first exercise.

1. As in preceding exercise.

COURSE II. 2. Bend the arms as in preceding exercise, raise both elbows and extend the fore-arms along the surface of the bar, press strongly with the hands, straighten both arms to their full extension, and rise above the bar as in preceding exercise.

In descending, let both fore-arms slowly return to the bar, pass both arms beneath the bar, quit the grasp and descend yielding.

TO RISE ABOVE THE BAR, RIGHT AND LEFT.

SECOND SERIES. Exercise 22.

Position as in first exercise.

1. As in sixteenth exercise. COURSE IV. 2. Bend the arms until the

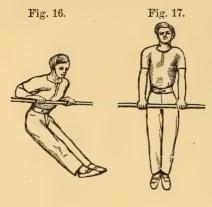
chin rises above the bar, and raise the elbow vertically above the bar (Fig. 15), the left following, straighten both arms to their full extension, and rise above the bar in the vertical line, as in preceding exercise.

In descending, re-bend the left arm, the right following, let the left sink below the bar, the right following, straighten the arms, and descend yielding.

This exercise to be repeated with the left hand leading.



TO RISE ABOVE THE BAR, BOTH HANDS AT ONCE.



SECOND SERIES.
Exercise 23.
Course IV.

Position as in first exercise.

1. As in sixteenth exercise.

2. Bend the arms until the chin rises above the bar, and without pause press strongly upon the bar with both hands at once, continue the upward movement and rise above it (Fig. 16), immediately completing the extension of the arms, and sustain the body, on the hands, in the vertical line above the bar (Fig. 17). This series of movements to be executed without pause and at the same pace throughout.

In descending, slowly re-bend the arms, sink beneath the bar, quit the grasp, and descend yielding.

TO RISE ABOVE THE BAR BACKWARDS, RIGHT AND LEFT.

SECOND SERIES.

Position as in first exercise.

Exercise 24.
Course IV.

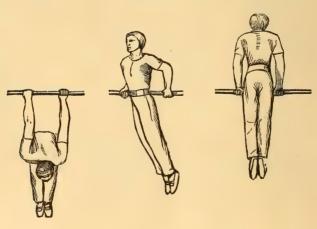
1. As in sixteenth exercise, but the grasp of the right hand reversed.

2. Raise the lower limbs by the front in position until the feet are as high as the bar, pass the feet under the bar, between the hands, straighten the lower limbs and let them descend by the rear (Fig. 18), elevate the right side

Fig. 18.

Fig. 19.

Fig. 20.



of the body, bringing it close up by the bar, and pressing strongly with the right hand until the fore-arm is straight above the bar, slackening but not quitting the grasp of the left hand (Fig. 19); support the weight of the body entirely on the right arm, quit the grasp of the left hand and re-grasp the bar at the distance beyond the right, at the same time turning the breast fully round to the bar, and resting equally on both hands (Fig. 20).

In descending, reverse the movements of the ascent, or descend as in

twenty-third exercise.

This exercise to be repeated, left and right.

TO RISE ABOVE THE BAR BACKWARDS, BOTH HANDS AT ONCE.

SECOND SERIES. Position as in first exercise.

Exercise 25. 1. As in sixteenth exercise, but the grasp of both Course IV. hands reversed.

2. As in preceding exercise to the elevation of the right fore-arm above the bar; from this point instead of quitting the grasp of the left hand, elevate the left side and raise the fore-arm above the bar, press strongly from both hands and rise seated on the bar.

In descending, reverse the movements of the ascent.

TO ENCIRCLE THE BAR.

SECOND SERIES. Position as in first exercise 26.

COURSE IV. 1. Spring from the ground and grasp the bar with both hands, the fingers and thumbs meeting, bend the arms and instantly shoot the lower limbs and the whole column of the body to the front, over the bar (Fig. 21), continue the circle lowering the body by the rear, quit the grasp, and descend yielding.

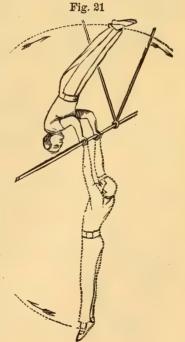
The following exercises on the trapezium may also be executed on this machine.

Exercise 8. To turn round the bar backwards and return.

Exercise 9. To turn under the bar on one hand. (The lower limbs being retained in the vertical line instead of being folded under the body.)

Exercise 12. To form the straight line.

Combinations of the exercises of the second series on this machine may also be formed on the same principle as the combinations on the trapezium.



THE PLANK.

THERE is no machine more simple than this, and none which may be made more directly and practically useful. All its exercises are of a simple kind, requiring and giving in their practice suppleness rather than strength.

The plank should be 14 inches wide and 1½ inch thick. Its length may vary

from 14 feet to 20 feet; its inclination should be frequently varied.

FIRST SERIES.....WITH HANDS AND FEET.
SECOND SERIES....WITH HANDS AND KNEES.
THIRD SERIES....WITH THE LEGS SUSPENDED.
FOURTH SERIES....WITH THE HANDS ONLY.

RIGHT HAND LEADING.

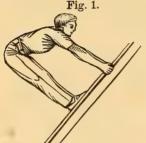
FIRST SERIES.

Exercise 1.

Position of attention, facing the plank, the toes touching it.

Course 1.

1. Lean forward, raise the right hand and grasp the edge



of the plank at the half reach, the left following on the left, the fingers under, the thumbs above and pointed upwards; lift the right foot from the ground, and place it on the plank, lift the left foot and place it beside the right, the legs straight, the feet flat upon the plank, the arms straight and firm, the head held back, the eyes directed to the reach of the hands (Fig. 1).

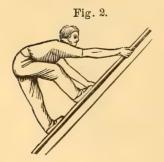
2. Raise the right hand to the reach, the left following on the left; incline the body to the front, draw up the right foot the distance

of the step, the left following on the left. Repeat.

In descending, slip down the right foot the distance of the step, the left following on the left, slip down the right hand, the left following on the left. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.



FIRST SERIES. Position as in first Exercise 2. exercise.

COURSE I. 1. As in first exer-

1. As in first exercise.

2. Slightly incline the body to the left, raise the right hand to the reach, and at the same time lift the right foot the distance of the step (Fig. 2); slightly incline the body to the right, raise the left hand to the reach opposite the right and at the same time lift the left foot and place it beside the right. Repeat.

In descending, slip the right hand down the distance of the step and at the same time slip the right foot down the same distance; the left hand and left foot following together on the left. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

FIRST SERIES. Position as in first exercise.

Exercise 3. 1. As in first exercise.

COURSE I. 2. Slightly incline the body to the left, raise the right hand to the reach, and at the same time lift the right foot the distance of the step, as in Fig. 2; incline the body to the right, raise the the left hand and left foot the distance of the step beyond the right hand and right foot. Repeat the step with the left hand and foot, passing the right.

In descending, slip down the leading hand and foot the distance of the step

below the supporting hand and foot. Repeat.

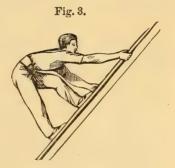
RIGHT AND LEFT, HAND AND FOOT.

FIRST SERIES. Position as in first ex-Exercise 4. ercise.

Course I. 1. As in first exercise.
2. Raise the right hand a short step, and at the same time lift the left foot the same distance (Fig. 3), raise the left hand the distance of the step beyond the right, and at the same time lift the right foot be-

In descending, slip the leading hand and foot down a short step, below the supporting hand and foot. Repeat.

yond the left. Repeat.



BOTH HANDS AT ONCE.

FIRST SERIES. Position as in first exercise.

Exercise 5. 1. Lean forward, raise both hands and grasp the edges of COURSE II. the plank as in first exercise, lift both feet and place them on the plank, then rest the body as in first exercise.

2. Shoot up both hands to the reach, inclining the body to the front, draw up both feet the distance of the step. Repeat.

In descending, slip down both feet the distance of the step, bring the hands down the same distance. Repeat.

RIGHT HAND LEADING.

SECOND SERIES. Position as in first exercise.

Exercise 6.

1. Lean forward and grasp the plank as in first exercise; Course II. lift the right leg and place the knee upon the plank, the

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front of the leg from the knee to the point of the toes resting on its surface, the left following on the left, the head held Fig. 4

back, the arms at the half reach (Fig. 4).

2. Raise the right hand to the reach, the left following on the left; raise the right knee the distance of the step, the left following. Repeat.

In descending, slip the right knee down the distance of the step, the left following; slip the right hand down the same distance; the left following. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.

SECOND SERIES.
Exercise 7.

Position as in first exercise.

Course II.

1. As in sixth exercise.

2. Raise the right hand to the the reach, and at the same time lift the right knee the distance of the step (Fig 5); raise the left hand to the reach opposite the right, and at the same time lift the left knee and place it beside the right. Repeat.

In descending, slip the right hand down the distance of the step, and at the same time slip the right knee down the same distance, the left hand and left knee following together on the left. Repeat.

This exercise to be repeated with the left side leading.



SECOND SERIES.

Position as in first exercise.

Exercise 8.

1. As in sixth exercise.

Course II. 2. Raise the right hand to the reach and at the same time lift the right knee the distance of the step as in Fig. 5; raise the left hand and left knee the distance of the step beyond the right hand and right knee. Repeat the step with the left hand and foot, passing the right.

In descending, slip down the leading hand and knee the distance of the step below the supporting hand and foot. Repeat.







RIGHT AND LEFT, HAND AND KNEE.

SECOND SERIES. Position as in first ex-Exercise 9. ercise.

Course II. 1. As in sixth exercise.

2. Raise the right hand a short step, and at the same time lift the left knee the same distance (Fig. 6); raise the left hand the distance of the step beyond the right, and at the same time lift the right knee beyond the left. Repeat.

In descending, slip the leading hand and knee down a short step, below the supporting

hand and knee. Repeat.



Fig. 6.

BOTH HANDS AT ONCE.

SECOND SERIES. Position as in first exercise.

Exercise 10.

1. Lean forward, raise both hands and grasp the edges Course III.

of the plank, as in sixth exercise, lift both feet and place the knees upon the plank as in sixth exercise.

2. Shoot up both hands to the reach, set the legs free from the plank, and draw up both knees the distance of the step. Repeat.

In descending, set the legs free from the plank and slip down both knees the distance of the step, bring the hands down the same distance. Repeat.

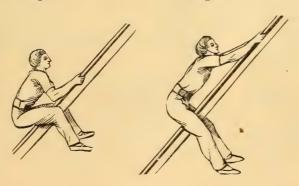
BOTH HANDS AT ONCE, THE LEGS SUSPENDED.

THIRD SERIES. Position as in first exercise.

Exercise 11. 1. Raise both hands and grasp the plank as in preceding COURSE IV. exercise; lift both legs from the ground and pass them right and left over the plank, resting on the edge of it under the knee, the fore-legs pendent on either side, the arms bent, the trunk of the body sustained, the head held back (Fig. 7).







2. Lean forward and shoot up both hands to the reach (Fig. 8), raise the lower limbs the same district. Repeat.

In descending pass the lower limbs down the distance of the step, lower the hands. Repeat.

THE RIGHT HAND LEADING.

FOURTH SERIES.
Exercise 12.
COURSE III.
Fig. 9.

Position as in first exercise.

1. Lean forward and with the right hand at the reach grasp the edge of the plank, the left following on the Fig. 10. left, the column of the body aligned down

left, the column of the body aligned down the centre of the plank, the head slightly bent back, the legs straight and together, the toes pointed downwards, the surface of the feet resting on the plank (Fig. 9).

2. Bend the arms and raise the body to the half reach; raise the right hand to the reach (Fig. 10), the left following on the left, draw up the body to the half reach. Repeat.

In descending, slip the right hand down to the rest, the left following on the left, lower the body to the reach of the hands. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT AND LEFT.

FOURTH SERIES. Position as in first ex-Exercise 13. cise.

Course III. 1. As in twelfth exercise.

2. Bend the arms and raise the body as in preceding exercise; raise the right hand to the reach and at the same time elevate the body to the rest of the left, raise the left hand to the reach beyond the right, at the same time elevate the body to the rest of the right. Repeat, the leading hand passing the supporting hand at each step.

In descending, slip the right hand down to the rest, lower the body to the reach of the left; slip the left hand down below the right, and lower the body to the reach of the right. Repeat.

BOTH HANDS AT ONCE.

FOURTH SERIES. Position as in first exercise. Exercise 14. 1. As in twelfth exercise.

COURSE IV. 2. Bend the arms and raise the body to the half reach of the hands, and on the instant shoot up both hands to the reach, draw up the body to the half reach. Repeat.

In descending, slip both hands down to the rest, lower the body to the reach. Repeat.

THE INCLINED LADDER.

It may seem unnecessary to teach by formal instructions exercises so simple as many of those directed in the text to be performed on this machine, but their usefulness may be readily proved. Let a dozen men be taken at hazard and desired to climb a ladder at any given incline, and it will be found that scarcely two will do so in the same manner, scarcely two will maintain throughout the ascent the position and action with which they began, while uncertainty, hesitation, and insecurity will more or less mark the efforts of all. The practised gymnast, on the contrary, will mount it as surely and as rapidly as if it were a staircase, in any one of a dozen different ways, on its being merely indicated by the name which it bears in his book of instructions.

This machine is an ordinary ladder, but it should be carefully constructed, and the materials well selected. The width of the ladder between the supports should be 14 or 15 inches, and the spars 9 inches apart.

The inclination of the ladder should be frequently varied.

FIRST SERIES.....ABOVE THE LADDER.
SECOND SERIES....UNDER THE LADDER.
THIRD SERIES....THE HANDS ONLY.

RIGHT HAND LEADING.

FIRST SERIES. Position of attention, at the foot of the ladder, the toes touching it.

COURSE I.

1. Raise the right hand and grasp the spar nearest the reach, the left following, the fingers and thumbs together; lift the right foot from the ground, and place it on the first spar, the left following, resting on the front of the foot, the toes pointed to the front, the column of the body and lower limbs straight but unconstrained, and inclined in the line of the ladder, the head erect, the eyes directed to the reach of the hands (Fig. 1).

2. Raise the right hand to the next spar, the left following, lift the right foot to the next spar straighten the right knee, and lift the left foot to the next spar. Repeat.

In descending, slip the right foot down to the next spar, the left following, slip the right hand down to the next spar, the left following. Repeat.

This exercise to be repeated with the left hand leading.

This exercise to be repeated with the hands lightly grasping the sides of the ladder,



Fig. 2.



RIGHT SIDE LEADING.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

COURSE I. 2. Raise the right hand to the next spar and at the same time lift the right foot to the next spar (Fig. 2), straighten the right knee and lift the left, hand and left foot together to the same spar. Repeat.

In descending, slip the right hand down to the next spar and at the same time slip the right foot down to the next spar, the left hand and left foot following. Repeat.

This exercise to be repeated with the left side leading.

This exercise to be repeated with the hands lightly grasping the sides of the ladder.

RIGHT AND LEFT SIDE.

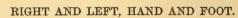
FIRST SERIES. Position as in first exercise.

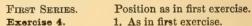
Exercise 3. 1. As in first exercise.

COURSE I. 2. Raise the right hand to the next spar, and at the same time lift the right foot to the nextspar, as in Fig. 2; straighten the right knee and at the same time raise the left hand to the spar above that grasped by the right, and lift the left foot to the spar above that occupied by the right. Repeat the step, the leading hand and foot always passing the spars occupied by the supporting hand and foot.

In descending, pass the leading hand down to the spar below that grasped by the supporting hand, and the leading foot to the spar below that occupied by the supporting foot. Repeat.

Fig. 3. This exercise to be repeated with the hands lightly grasping the sides of the ladder.





COURSE I. 2. Raise the right hand to the next spar and at the same time lift the left foot to the next spar (Fig. 3); straighten the left knee and at the same time raise the left hand to the spar above that grasped by the right, and lift the right foot to the spar above that occupied by the left. Repeat the step, the leading hand and foot always passing the spars occupied by the supporting hand and foot.

In descending, pass the leading hand to the spar below that grasped by the supporting hand, and the leading foot to the spar below that occupied by the supporting foot. Repeat.

This exercise to be repeated with the hands lightly grasping the sides of the ladder.

BOTH HANDS AT ONCE.

FIRST SERIES. Position as in first exercise. Exercise 5. 1. As in first exercise.

2. Raise both hands to the next spar; lift the right foot COURSE II. to the next spar, the left following. Repeat.

In descending, slip the right foot down to the next spar, the left following;

slip both hands down to the next spar. Repeat.

This exercise to be repeated with the hands lightly grasping the sides of the ladder.

WITH ONE HAND.

FIRST SERIES. Position as in first exercise. 1. Place the left hand upon the Exercise 6. COURSE II. hip joint, the fingers to the front the thumb to the rear; raise the right hand and grasp the spar nearest the reach, lift the left foot and place it on the first spar, the right following (Fig. 4).

2. Raise the right hand to the next spar, lift the left foot to the next spar, straighten the left knee, elongate the trunk, and lift the right foot to the same spar. Re-

In descending, slip the left foot down to the next spar, the right following, slip the right hand down to the next spar. Repeat.

This exercise to be repeated with the left hand.

This exercise to be repeated with the hand lightly grasping the side of the ladder.

WITH THE FEET ONLY.

FIRST SERIES. Position as in first exercise. Exercise 7. 1. Place both hands on the hip COURSE II. joints, lift the right foot from the ground and place it on the first spar, the left following, the feet advanced on the spar so that the rest is nearly at the heel, and the front of the leg nearly touching the spars; the column of the body inclined to the front, the head in the same line and the eyes directed to the front.

2. Lift the left foot to the second spar (Fig. 5), straighten the left leg and at the same time lift the right foot to the same spar. Repeat.

In descending, slip the left foot down to the next spar, the right following. Repeat.





Fig. 5.



RIGHT HAND LEADING.

(BY THE SPARS.)

Fig. 6.



SECOND SERIES. Position of attention, under the ladder.

COURSE III. 1. Raise the right hand and grasp the spar nearest the reach, the left following, the fingers and thumb together; lift the right foot from the ground and place it on the nearest spar, the left following, straighten the knees, elongate the trunk, the arms benf at the half reach, the chest advanced, the body inclined in the line of, and close to the ladder, the head back, the eyes directed to the reach of the hands (Fig. 6).

2. Raise the right hand to the next spar, the left following; lift the right foot to the next spar, the left following, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right foot down to the next spar, the left following; slip the right hand down to the next spar, the left following. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.

(BY THE SPARS.)

SECOND SERIES.

SECOND SERIES. Position as in eighth ex-Exercise 9. ercise.

Course II. 1. As in eighth exercise.

2. Raise the right hand to the next spar, and at the sametime lift the right foot to the next spar (Fig. 7), the left hand and foot following on the left. Repeat.

In descending, slip the right hand down to the the next sper, and at the same time slip the right foot down to the next spar, the left hand and foot following together to the same spars. Repeat

This exercise is to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

(BY THE SPARS)

Position as in eighth exercise.

1. As in eighth exercise.

2. Raise the right hand to the next spar, and at the

Fig. 7.



SECOND SERIES.
Exercise 10.
COURSE II.

same time lift the right foot to the next spar, as in Fig. 7; straighten the right knee and at the same time raise the left hand to the spar above that grasped by the right, and lift the left foot to the spar above that occupied by the right. Repeat the step, the leading hand and foot always passing the supporting hand and foot.

In descending, pass the leading hand down to the spar below that grasped by the supporting hand, and the leading foot to the spar below that occupied by the supporting foot. Repeat. Fig. 8.

RIGHT AND LEFT, HAND AND FOOT.

(BY THE SPARS.)

SECOND SERIES. Position as in eighth ex-Exercise 11. ercise.

Course II. 1. As in eighth exercise.

2. Raise the right hand to the next spar and at the same time lift the left foot to the next spar (Fig. 8), straightening the left knee and elongate the trunk, and at the same time raise the left hand to the spar above that grasped by the right, and the right foot to the spar above that occupied by the left. Repeat the step, the leading hand and foot always passing the spars occupied by the supporting hand and foot.

In descending, slip the leading hand down to the spar below that grasped by the supporting hand and the leading foot to the spar below that occupied by the supporting foot. Repeat.

BOTH HANDS AT ONCE.

(BY THE SPARS.)

SECOND SERIES. Exercise 12. Course III.

Repeat.

As in eighth exercise.

1. As in eighth exercise. Raise both hands to the next spar and lift both feet to the next spar straighten the knees and elongate the trunk-

In desending, pass both feet down to the next spar, and pass both hands down to the next spar, Repeat.

RIGHT HAND LEADING.

(BY THE SIDES.)

SECOND SERIES. Position as in eighth ex-Exercise 13. cises.

COURSE II. 1. As in eighth exercise,

except that the hands grasp the sides of the ladder, right and left, instead of the spars (Fig. 9).





2. Raise the right hand to the reach, the left following on the left; lift the right foot to the next spar, the left following, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right foot down to the next spar, the left following; slip the right hand down to the rest, the left following on the left. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING

(BY THE SIDES.)

SECOND SERIES. Position as in eighth exercise. Exercise 14 1. As in thirteenth exercise.

COURSE II. 2. Raise the right hand to the reach, and at the same time lift the right foot to the next spar, the left hand and foot following on the left. Repeat.

In descending, slip the right hand down to the rest, and at the same time slip the right foot down to the next spar, the left hand and left foot following on the left. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

(BY THE SIDES.)

SECOND SERIES. Position as in eighth exercise. 1. As in thirteenth exercise. Exercise 15.

Raise the right hand to the reach, and at the same Course II. time lift the right foot to the next spar, straighten the right knee, and at the same time raise the left hand to the reach and lift the left foot to the spar above that occupied by the right. Repeat the step, the leading hand and foot always passing the supporting hand and foot.

In descending, pass the leading hand down to the rest, and at the same time slip the leading foot down to the spar below that occupied by the supporting

foot. Repeat.

RIGHT AND LEFT, HAND AND FOOT.

(BY THE SIDES.)

Position as in eighth exercise. SECOND SERIES. 1. As in thirteenth exercise. Exercise 16.

Course II. 2. Raise the right hand to the reach, and at the same time lift the left foot to the next spar; straighten the left knee and elongate the trunk, and at the same time raise the left hand to the reach and the right hand to the spar above that occupied by the left. Repeat the step, the leading hand and foot always passing the supporting hand and foot.

In descending, pass the leading hand down to the rest, and at the same time slip the leading foot down the spar below that occupied by the support-

ing foot. Repeat.

BOTH HANDS AT ONCE.

(BY THE SIDES.)

SECOND SERIES. Exercise 17.

Position as in eighth exercise.

1. As in thirteenth exercise.

2. Raise both hands to the reach, lift both feet to the COURSE III next spar, straighten the knees and elongate the trunk. Repeat.

In descending, slip both hands down the distance of the step, pass both feet down to the next spar. Repeat.

RIGHT HAND LEADING.

(BY SPARS AND SIDES.)

SECOND SERIES. Exercise 18.

Position as in eighth

exercise.

COURSE II. 1. As in eighth exercise, except that the leading hand grasps the spar, the supporting hand grasps the side of the ladder (Fig. 10).

2. Raise the right hand to the next spar, raise the left hand the same distance on the side; lift the right foot to the next spar, the left following, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right foot down to the next spar, the left following, slip the right hand down to the next spar, the left following on the side, the same distance. Repeat.



This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.

(BY SPARS AND SIDES.)

SECOND SERIES. Exercise 19.

Position as in eighth exercise. 1. As in eighteenth exercise.

Course II. 2. Raise the right hand to the next spar, and at the same time lift the right foot to the next spar, the left hand and left foot following the same distance. Repeat.

In descending, slip the right hand down to the next spar, and at the same time slip the right foot down to the next spar, the left hand and left foot following the same distance. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

(BY SPARS AND SIDES.)

SECOND SERIES. Exercise 20.

Position as in eighth exercise. 1. As in eighteenth exercise.

COURSE II.

2. Raise the right hand to the next spar, and at the

same time lift the right foot to the next spar; straighten the right knee and at the same time raise the left hand the distance of the step above the right and the left foot to the spar above that occupied by the right. Repeat the step, the leading hand and foot always passing the supporting hand and foot.

In descending, slip the leading hand and foot down the distance of the step

below the supporting hand and foot. Repeat.

RIGHT AND LEFT, HAND AND FOOT. -

(BY SPARS AND SIDES.)

SECOND SERIES.

Exercise 21.

Position as in eighth exercise.

1. As in eighteenth exercise.

COURSE II. 2. Raise the right hand to the next spar, and at the same time lift the left foot to the next spar; raise the left hand the distance of the step above the right, and the right foot to the spar above that occupied by the left. Repeat the step, the leading hand and foot always passing the supporting hand and foot.

In descending, slip the leading hand and foot down the distance of the step below the supporting hand and foot. Repeat.

BOTH HANDS AT ONCE.

(BY SPARS AND SIDES.)

SECOND SERIES. Exercise 22. Position as in eighth exercise.

1. As in eighteenth exercise.

COURSE III. 2. Raise both hands the distance of the step, the right grasping the next spar, the left grasping the side; lift both feet to the next spar, straighten the knees and elongate the trunk. Repeat.

In descending, slip both hands down the distance of the step, pass both

feet down to the next spar. Repeat.

RIGHT HAND LEADING.

(BY THE SIDES.)

Fig. 11.

THIRD SERIES. Position as in seventh exercise. Exercise 23. 11. Raise the right hand to the Course III. reach and grasp the side of the ladder, the left following on the left, the fingers and thumbs meeting; bend the arms to the half reach, lifting the feet from the ground, the legs straight and together, the toes pointed downwards, the trunk of the body upright, the neck free, the head held back, the eyes directed to the reach of the hands (Fig. 11).

2. Raise the right hand to the reach, the left following on the left; bend the arms to the half reach, retaining the trunk and lower limbs in position. Repeat.

In descending, slip the right hand down to the rest, the left following on the left. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

(BY THE SIDES.)

THIRD SERIES.

Position as in eighth exercise.

Exercise 24.

1. As in twenty-second exercise.

COURSE III. 2. Raise the right hand to the reach, bend the right arm and on the instant raise the left hand to the reach, beyond the right. Repeat, the leading hand always passing the spar grasped by the supporting hand.

In descending, slip the leading hand down to the rest, below the supporting hand. Repeat.

BOTH HANDS AT ONCE.

(BY THE SIDES.)

THIRD SERIES.

Position as in eighth exercise.

Exercise 25.
Course IV.

1. As in twenty-second exercise.

COURSE IV. 2. Shoot up both hands to the reach, retaining the arms bent, and the trunk and lower limbs in position. Repeat.

In descending, slip both hands down to the reach. Repeat.

RIGHT HAND LEADING.

(BY THE SPARS.)

THIRD SERIES.

Exercise 26

Position as in eighth

exercise.

Course III.

1. Raise the right hand and grasp the spar nearest the reach, the left following, the fingers and thumbs together; bend the arms to the half reach, lifting the feet from the ground, the trunk and lower limbs as in twenty-first exercise (Fig. 12.)

2. Raise the right hand to the next spar, the left following, bend the arms to the half reach, retaining the trunk and lower limbs in position. Repeat.

In descending, slip the right hand down to the next spar, the left following. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

(BY THE SPARS.)

THIRD SERIES.

Exercise 27.

Position as in eighth exercise.

1. As in twenty-fifth exercise.

COURSE III. 2. Raise the right hand to the next spar, bend the right arm and on the instant raise the left hand to the spar above that grasped by the right. Repeat, the leading hand always passing the spar grasped by the supporting hand.

In descending, slip the leading down to the spar below that grasped by the supporting hand. Repeat.



BOTH HANDS AT ONCE.

(BY THE SPARS.)

Third Series. Position as in eighth exercise. Exercise 28. 1. As in twenty-fifth exercise.

COURSE IV. 2. Shoot up both hands to the next spar, retaining the arms bent, and the trunk and lower limbs in position. Repeat.

In descending, slip both hands down to the next spar. Repeat.

RIGHT HAND LEADING.

(BY SPARS AND SIDES.)

THIRD SERIES. Position as in eighth exercise.

Exercise 29.

1. As in twenty-third exercise, except that the right Course III. hand grasps the spar, the left hand grasps the side of the ladder, opposite the right.

2. Raise the right hand to the next spar, the left following the same distance on the side. Repeat.

In descending, slip the right hand down to the next spar, the left following the same distance on the side. Repeat.

This exercise to be repeated with the left hand leading and grasping the spar, the right hand on the side.

HAND OVER HAND.

(BY SPARS AND SIDES.)

THIRD SERIES. Position as in eight exercise.

Exercise 30.

1. As in twenty-ninth exercise.

COURSE III. 2. Raise the right hand to the next spar, bend the right arm and on the instant raise the left hand to the reach beyond the right. Repeat, the leading hand always passing the supporting hand.

In descending, slip the right hand down to the next spar below the left, slip the left down below the right. Repeat.

This exercise to be repeated, the left hand grasping the spar, the right hand on the side.

BOTH HANDS AT ONCE.

(BY SPARS AND SIDES.)

THIRD SERIES. Position as in eighth exercise. Exercise 31. As in twenty-ninth exercise.

Course IV. 2. Shoot up both hands the distance of the step (the distance between the spars), the right grasping the next spar, the left grasping the side of the ladder, opposite the right. Repeat.

In descending, slip both hands down the distance of the step, as in the ascent. Repeat.

This exercise to be repeated, the left hand grasping the spar, the right hand on the side.

LEFT HAND LEADING.

(SIDEWAYS.)

THIRD SERIES. Position of attention, the ladder

Exercise 32. in profile on the left.

Course III.

1. Raise the right hand and passing it above the ladder, grasp the spar nearest the reach, the fingers and thumb meeting, raise the left hand and passing it under the ladder, grasp the spar above that grasped by the right; bend the arms and lift both feet from the ground, the legs straight and together, the toes pointed downwards, the trunk of the body upright, the neck free, the head slightly held back the eyes directed to the reach of the hands (Fig. 13).

2. Raise the left hand to the next spar, raise the right

hand to the next spar. Repeat.

In descending, pass the right hand down to the next spar, pass the left hand down to the next spar. Repeat.

This exercise to be repeated with the right hand

leading.



HAND OVER HAND.

(SIDEWAYS.)

THIRD SERIES. Position as in thirty-second exercise.

I zereise. 1. As in thirty-second exercise.

COURSE IV. 2. Raise the right hand to the spar above that grasped by the left, elevate the body and raise the left hand to the spar above that grasped by the right. Repeat.

In descending, pass the leading hand down to the spar below that grasped

by the supporting hand. Repeat.

RIGHT HAND LEADING.

(SIDEWAYS. LEGS UP.)

THIRD SERIES. Position as in thirty-Exercise 34. second exercise.

Course III. 1. As in thirty-second exercise, except that in lifting the feet from the ground they are to be extended to the front horizontally the legs straight and together, the toes pointed to the front (Fig. 14.)

2. As in thirty-second exercise, retaining the lower limbs in position. Repeat.

Descend as in thirty-second exercise.

This exercise to be repeated with the left hand leading.



HAND OVER HAND.

(SIDEWAYS. LEGS UP.)

THIRD SERIES. Position as in thirty-second exercise. Exercise 35.

1. As in thirty-fourth exercise.

Course IV. 2. As in twenty-fifth exercise, retaining the lower limbs

in position. Repeat.

Descend as in thirty-third exercise.

RIGHT HAND LEADING.

(ABOVE THE LADDER.)



THIRD SERIES. Position as in first exercise.

Exercise 36.

1. Raise both hands and grasp the spar nearest the reach, the fingers and thumb meeting; press strongly from the hands and straightening the arms, lift both feet from the ground and pass them right and left outside the ladder, the inside of the foot lightly pressing against the supports, the legs straight, the toes pointed downwards, the chest advanced, the head slightly bent back (Fig. 15).

2. Raise the right hand to the next spar, straighten the right arm, and raise the left hand to the same spar. Repeat.

In descending, slip the right hand down to the

next spar, the left following. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

(ABOVE THE LADDER.)

THIRD SERIES.

Exercise 37.

Position as in first exercise.

1. As in thirty-sixth exercise.

Course IV.

2. Raise the right hand to the next spar, straighten the right arm and on the instant raise the left hand to the spar above that grasped by the right. Repeat the step, the leading hand always passing the spar grasped by the supporting hand.

In descending, slip the leading hand down to the spar below that grasped by

the supporting hand. Repeat.

The first five exercises of the second series and the first three exercises of the third series may be executed with the hands reversed.

TO DESCEND RAPIDLY.

(ABOVE THE LADDER.)

Pass the right leg over the side of the ladder, the knee bent, the foreleg pendent, the left leg following on the left. Pass the right hand to the outside of

the ladder grasping the support on the underside, the fingers and thumb together, the left hand following on the left. Regulate the rate of descent by the pressure of the hands.

CLIMBING.

An upright object presents itself as the most perfect form of machine to be ascended by climbing, and the hands are the chief agent in affecting the ascent, for they not only aid in the execution of every exercise, simple or difficult, in which the feet take a share, but there is a large series embracing the most difficult and artistic exercises, in which the body is sustained and elevated by the hands alone.

Following out this idea, a perfectly vertical object, of girth capable of being grasped by the hand, may be viewed as the typical machine for climbing. But this simple description of machine instantly takes a dual form from the nature of the material of which it is constructed; it is either hard and firm, like the wooden pole affording unyielding fulcra to the muscles of the hands in their grasp, and to those of the feet in their clasp, or it is soft and pliable like the hempen rope, the characteristics of which are the reverse of these.

We have thus at the very outset two machines, giving origin to the two divisions of machines employed in this section, the one being the single upright pole, fixed or suspended, and the other, its companion machine, the single rope similarly placed; and all deviations from these two, either in dimensions, number, or position, are but modifications of them, designed for special purposes.

Where the single pole is retained, and its dimensions only are altered, every gradation of size may be obtained until the girth of the mast is reached, the exercises being modified or changed with the alteration in the dimensions of the machine. Where the single pole is retained, and its position changed for the inclined one, the exercises again change, taking a range both wide and varied; and when the pole, from being fixed, is made to turn on its axis, again the exercises, in action and position, in nature and purpose, change also.

The first division, springing from the slender, upright pole, branches first into the pair of poles, arranged in such a position as to present one to each hand about the width of the shoulders apart, the body to be sustained between the two, and from this arrangement springs an arduous series of exercises; next, into those poles which, being inclined, present a long series of simple exercises, the altered position of the poles altering the entire character of the exercises to be executed upon them.

The second branch, springing from the single vertical rope, also takes a very extended form. A double rope is not accepted, as yielding no exercise sufficiently removed from those on the pair of poles to justify its adoption as a separate machine. A wider range of exercises, in which the lower limbs also are employed, is afforded by the rope than by the pole, and those in which the hands alone sustain and elevate the body are all a degree harder than the corresponding ones on its companion machine. The single rope

may be simple or knotted, the knots being formed in the rope itself, or superadded; and every change will to some extent enlarge the range of the exercises, qualify their difficulty, and vary the parts of the body required for their execution.

The position varies but little throughout the section with regard to the trunk of the body, because it is determined by principles which are equally important in every exercise, viz., to set the limbs free from the due execution of the movements of the step, to preserve the equilibrium, and to give full scope to respiration; but with regard to the limbs, it is varied in every exercise on each machine.

In the initiatory practice, the instructor should count the time for the learner,—one, two, three,—for the three separate movements of the step, at a pace proportionate to his ability, taking care that each step is of the same length, and executed at the same speed as the others; perfect cadence and rhythm should accompany the whole of each exercise, both in the ascent and descent.

The initiatory practice should consist of brief efforts, and the instructor should give the 'halt' on the slightest indication of exhaustion or insecurity of grasp; a pause, less or more protracted, should always follow the halt, and as much care should be given to the descent as to the ascent; the last step should be as carefully completed as any in the exercise, the feet should be set leisurely upon the ground, and the grasp of the hands quietly relinquished, the movement being closed in the original position of 'attention,' and place immediately given to another climber.

The instructor should also carefully impress upon the learner the desirability of executing every exercise quietly and steadily, of keeping the countenance quiet even under the most severe efforts, and of never, on any occasion, speaking while executing an exercise himself, or of addressing any one else who is doing so.

On the other hand, so long as proper care and attention are given to the exercises, and full regard is paid to the directions of the instructor, an outward expression of pleasure and interest among the learners is to be encouraged rather than checked; and the slips and mishaps of beginners, in certain exercises where no attendant danger is to be dreaded, are legitimate sources of amusement; its proper bounds being always a matter of calculation with the instructors.

THE VERTICAL POLE.

It is characteristic of simple climbing, i. e. that form of climbing in which all the resources of the body capable of aiding in the ascent are called into action, that the upper and lower limbs and trunk all receive a fair share of well-distributed employment. The first series gives the same employment in every exercise to the lower half of the body, with a different mode of employment to the upper, in each separate one. In the first exercise (which is considered the easiest mode of ascent, because neither hand is ever separated for

a moment from the pole, while both are acting during the elevation of the body which completes each step), one side of the body leads throughout the ascent, and the other throughout the descent. In an elementary sense this feature can be turned to great advantage if one side of the body be weaker than the other, by giving that side the lead, and consequently the largest share of employment; in a practical sense by making the strongest and most dexterous member the leading one, and consequently the chief agent in the ascent. In the next form, where the action is alternated right and left, the equalization of the body is preserved on the same principle as in certain exercises in the preceding section, from the fact that both sides are separately, and each for itself and by itself, doing the same amount of work, and therefore the weaker side, being the weaker, is virtually doing more, -is being urged to greater activity, reaping a proportionately greater advantage. Here each hand, during its elevation, entirely guits the pole, and the body is raised on the elevation of each. In the fourth exercise both hands act together, both in the ascent and descent, thus both quitting the pole at the same instant.

In all these exercises the column of the body is maintained in the position most favorable to free respiration.

The instructor should take care that the learner places his hands and feet in their proper order and position in commencing each exercise; the leading arm should be completely extended to the reach at each step, and the arms must not be bent when the feet are lifted, but only when the elongation of the legs and trunk renders it necessary in the third movement of the step. Beginners frequently try to struggle up the machine by means of the hands only, the instructor should therefore carefully explain to them how one part of the body assists the other in making the ascent, and how, upon the correct employment of these various parts, the facility and elegance of climbing depend. When the feet are lifted in the second movement, the upper part of the body must not be allowed to incline backwards, but the back must be bent outwards.

In the third movement, the legs and trunk must be straightened without jerk, and the whole body be kept as close to the pole as possible. In the descent, the legs and trunk should be kept straight throughout, the body being sustained by the legs during the movements of the hands.

In the second exercise, the upper part of the body must not be allowed to sway too much from side to side, which is apt to result from the separate employment of the hands; and in the descent the moving hand should not be placed until the opposite arm is perfectly extended.

The second series of exercises on this machine is of a much more arduous character than the first. In the former the upper limbs take up and repeat the action of the latter, but they are entirely unaided by the lower limbs and trunk, and in some exercises the position of these is chosen for its value in an elementary sense, its object being to heighten the difficulty of the exercise, and to intensify the action of the upper part of the body, by acting strongly against it.

In the first exercise of this series, the lower half of the body is merely held quiescent, and in the position most favorable to the ascent; in the second, it

is held formally in the line of the machine; and in the third, the same formality of position is preserved with the lower half, while the upper is employed in rapid action, elevating the whole.

The elementary value of this second series is very great, developing powerfully not only the muscular energies of the arms and upper portion of the trunk, but the tenacity and security of the grip of the hands, and the facility and readiness of action of the upper limbs, either in separate or combined effort. The single exercise of the third series may be viewed as the culminating one on this machine.

In performing the exercises the learner must be instructed not to allow the left side to sway round to the left side of the pole; but the hands must ascend and descend in a straight line, and the same side of the pole be retained throughout. In the second exercise, beginners are very apt to make a more complete step with the left hand than with the right, because they are better able to support themselves with the right while the left moves, and for the same reason to allow the left arm to relax while the right moves, so that special attention is required to insure an equal step with each hand. In the fourth exercise the body must not be allowed to recede as the hands are moved, and the movement of these must therefore take place before the flexion of the arms is quite complete.

In the last exercise a strong pressure of the feet will be required to prevent the body from receding as the hand is raised to the reach, and the upper part of the body must be kept as close as possible to the pole throughout.

During the first few steps, the position of the instructor should be where he can best observe the movements of the climber; afterwards, his position should be behind the climber on the left, that he may be able to interpose his right hand in the event of a slip.

The Vertical Pole may be of any height from 15 feet to 30 feet, and there should be in a gymnasium three or four of different diameter, viz. 2 inches, 2½ inches, and 3 inches.

FIRST SERIES.....With hands and feet. SECOND SERIES.....With hands only.

RIGHT HAND LEADING.

FIRST SERIES. Position of attention, facing the pole.

Exercise 1.

1. Raise the right hand to the reach and grasp the pole, Course I.

the left following (Fig. 1); lift the right foot from the ground and place it against the left side of the pole, the knee on the right side (Fig. 2); lift the left foot and place it in front of the pole, the ankles crossing, the outside edges of the feet together, the pole between them (Fig. 3); straighten the legs and elongate the trunk; the whole column of the body upright, the chest advanced, the shoulders flat, the elbows in by the sides, the hands at the half reach, the neck free, the head slightly held back, the chin elevated, the eyes directed to the reach of the hands (Fig. 4).

2. Raise the right hand to the reach and grasp the pole, the left following; draw up the lower limbs without relinquishing their clasp of the pole, allowing it, as it were, merely to slip between, and without bending the arms, as in

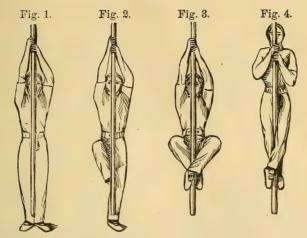


Fig. 3; tighten the clasp of the feet when elevated, straighten the knees and elongate the trunk to the rest of the hands, as in Fig. 4. Repeat.

In descending, slip the left hand down to the rest and grasp the pole, the right following; slacken the clasp of the lower limbs, lower the body to the reach of the hands, retaining the legs straight and the pole between them. Repeat.

This exercise to be repeated with the left hand leading, the relative positions of the feet reversed. Fig. 5.

HAND OVER HAND.

FIRST SERIES. Position as in first exercise.

1. As in first exercise. Exercise 2.

Course I. 2. Raise the right hand to the reach and grasp the pole (Fig. 5), draw up the lower limbs without bending the right arm, straighten the legs, and elongate the trunk to the rest of the right arm. Repeat, raising the left hand to the reach: the right and left hand alternating throughout.

In descending, slip the leading hand down to the rest and grasp the pole, lower the body to the reach of the supporting hand, the rest of the body as in first exercise. Repeat.

HAND OVER HAND.

(A SECOND METHOD.)

FIRST SERIES. Position as in first exercise. Exercise 3.

1. As in first exercise.

2. Raise the left hand to the half reach above Course I.

the right, and raise the right to the reach above the left, draw up the lower limbs, straighten the legs, and elongate the trunk. Repeat.

Descend as in second exercise.



BOTH HANDS AT ONCE.

FIRST SERIES. Position as in first exercise.

Exercise 4. 1. Raise both hands to the reach and grasp the pole; lift Course II. both feet from the ground and clasp the pole in the position of first exercise, bringing the hands to the half reach, as in Fig. 4, the rest of the body as in first exercise.

2. Shoot up both hands to the reach, draw up the lower limbs without bending the arms, straighten the knees and elongate the trunk. Repeat.

In descending, slip both hands down to the rest and grasp the pole, lower the body to the reach of the hands, the rest of the body as in first exercise. Repeat.

Fig. 6.



WITH ONE HAND.

FIRST SERIES. Position as in first exercise.

Exercise 5.

1. Raise the right hand to the reach Course IV. and grasp the pole; spring from the ground and clasp the pole with the feet as in first exercise, bringing the right hand to the half reach; place the left hand on the hip joint, the fingers to the front, the thumb to the rear, the rest of the body in the position of first exercise.

2. Tighten the clasp of the feet, raise the right hand to the reach (Fig. 6), draw up the lower limbs without bending the arm, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right hand down to the rest, lower the body to the half reach of the hand. Repeat.

This exercise to be repeated with the left hand.

RIGHT HAND LEADING.

SECOND SERIES Position as in first exercise.

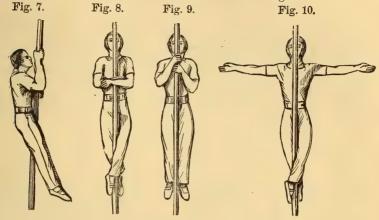
Exercise 6.

1. Raise the right hand to the reach and grasp the pole, Course III. the left following; lift both feet from the ground and pass them to the right side of the pole, the hands at the half reach, the left thigh slightly pressing against it; the legs together and straight and slanting to the front, the toes pointed in the same direction, the trunk of the body held firm and upright, the chest advanced, the shoulders flat, the elbows in by the sides, the head slightly held back, the eyes directed to the reach of the hands (Fig. 7).

2. Raise the right hand to the reach and grasp the pole, the left following; elevate the body to the half reach of the hands. Repeat. At the last step, clasp the pole with the feet as in first exercise.

In descending, grasp the pole firmly with the left hand, and pass the right outside the pole over to the left breast, against which press with the open palm (Fig. 8); pass the left outside of these, and with the open palm press the outside of the right fore-arm. By the clasp of the feet and the pressure of the arms guide the rate of descent.

This exercise to be repeated with the lower limbs on the left side of the pole. These exercises to be repeated with the left hand leading.



HAND OVER HAND.

SECOND SERIES.

Position as in first exercise.

Exercise 7. Course III.

1. Raise the right hand to the reach and grasp the pole. the left following; lift both feet from the ground, raising the body until the hands are at the half reach; the legs straight and together, the toes pointed downwards; and slightly turned out (the pole lying free between them), the column of the body perfectly upright and in the line of the pole, the head erect, the eyes directed to the reach of the hands (Fig. 9).

2. Raise the right hand to the reach, elevating the body to the rest of the left; raise the left hand to the reach, elevating the body to the rest of the right. At the last step clasp the pole with the feet, as in first exercise.

In descending, remove the hands from the pole and extend the arms horizontally to the side, right and left, the fingers together, the palms to the front (Fig. 10). Guide the descent by the pressure of the lower limbs.

BOTH HANDS AT ONCE.

SECOND SERIES.

Position as in first exercise.

Exercise 8. COURSE III.

1. Raise both hands to the reach and grasp the pole, the rest of the body as in sixth exercise.

2. Shoot up both hands to the reach and grasp the pole, elevate the body to the half reach of the hands. Repeat.

In descending, slip both hands down to the rest and grasp the pole, lower the body to the half reach of the hands. Repeat.

THE VERTICAL POLE.

(FIXED CLOSE TO A WALL.)

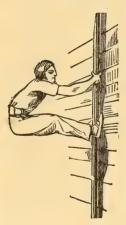
THE difficulty of the exercises on this machine in this position is almost solely owing to its position against a wall, whereby the freedom of the handgrasp and the clasp of the lower limbs are entirely lost. All its exercises are of the most arduous description, and can only be accomplished after the hand and fore-arm have been strengthened by similar but less difficult exercise.

This machine is a pole, 3 inches in diameter, fixed within $1\frac{1}{2}$ inch of the face of a wall by means of small wooden blocks at intervals behind it.

FIRST SERIES....HANDS AND FEET.
SECOND SERIES...HANDS AND KNEES.

RIGHT HAND LEADING.

Fig. 1.



FIRST SERIES. Position of attention, facing the Exercise 1. wall, the toes touching it.

COURSE IV. 1. Raise the right hand to the reach and grasp the pole, the fingers and thumb meeting, the left following close under it; lift the right foot from the ground and place it flat upon the wall as high as the hip, on the right side of, and close to, the pole, the left following on the left (Fig. 1).

2. Slightly incline the body to the left front, raise the right hand to the reach, incline the body to the right front, raise the left hand to the reach, grasp strongly with both hands, lift the right foot the distance of the step, the left following on the left. Repeat.

In desceding, slip the left foot down the distance of the step, the right following; slip the left hand down to the rest, the right following. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

Course IV. 2. Slightly incline the body to the left front, raise the right hand to the reach and at the same time lift the right foot the distance of the step; the left hand and left foot following together the same distance. Repeat.

In descending, slightly incline the body to the left front, slip the right hand down to the rest and at the same time slip the right foot down the same distance. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

FIRST SERIES. Position as in first exercise.

Exercise 3. 1. As in first exercise.

COURSE IV. 2. Slightly incline the body to the left front, raise the right hand to the reach and at the same time lift the right foot the distance of the step (Fig. 2); incline the body to the right front, raise the left hand to the reach above the right and at the same time lift the left foot the distance of the step beyond the right. Repeat.

In descending, incline the body to the supporting side, pass the leading hand down to the rest and at the same time slip the leading foot down the dis-

tance of the step. Repeat.

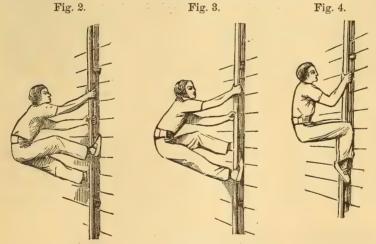
RIGHT AND LEFT, HAND AND FOOT.

First Series. Position as in first exercise.

Exercise 4. 1. As in first exercise.

COURSE IV. 2. Raise the right hand to the reach and at the same time lift the left foot the distance of the step (Fig. 3); raise the left hand to the reach and at the same time lift the right foot the distance of the step. Repeat.

In descending, pass the leading hand down to the rest, and at the same time slip the leading foot down the distance of the step. Repeat.



RIGHT HAND LEADING.

SECOND SERIES. Position as in first exercise.

Exercise 5.

1. Raise the right hand to the reach and grasp the pole, Course IV.

the left following close under it; spring from the ground and bring both knees against the wall, as high as the waist, one on each side of the pole, touching it (Fig. 4).

2. Raise the right hand to the reach, the left following, grasp strongly with the hands and spring upwards from both knees. Repeat.

In descending, slip the left hand down to the rest, the right following, grasp strongly and slip both knees down the distance of the step. Repeat.

This exercise to be repeated with the left hand leading.

RIGHT SIDE LEADING.

SECOND SERIES. Position as in first exercise.

Exercise 6. 1. As in fifth exercise.

COURSE IV. 2. Raise the right hand to the reach and at the same time lift the right knee the distance of the step; the left hand and left knee following the same distance. Repeat.

In descending, slip the right hand down to the rest, and at the same time slip the right knee down the same distance, the left hand and knee following together on the left. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

SECOND SERIES. Position as in first exercise.

Exercise 7. 1. As in fifth exercise.

Exercise 7.

COURSE IV.

2. Raise the right hand and knee as in preceding exercise; raise the left hand and left knee the distance of the step beyond the

right hand and right knee. Repeat, the leading hand and knee always passing the supporting hand and knee.

In descending, pass the leading hand down to the rest, and at the same time slip the leading knee down the distance of the step. Repeat.

RIGHT AND LEFT, HAND AND KNEE.

SECOND SERIES. Position as in first exercise.

Exercise 8. 1. As in fifth exercise.

COURSE IV. 2. Raise the right hand to the reach and at the same time lift the left knee the distance of the step; raise the left hand to the reach and at the same time lift the right knee the distance of the step. Repeat.

In descending, pass the leading hand down to the rest, and at the same time slip the leading knee down the distance of the step. Repeat.

BOTH HANDS AT ONCE.

SECOND SERIES. Position as in first exercise.

Exercise 9. 1. As in fifth exercise.

COURSE IV. 2. Raise both hands to the reach, grasp the pole strongly and spring upward with both knees the distance of the step. Repeat.

In descending, slip both hands down to the rest, grasp the pole strongly and slip both knees down the distance of the step. Repeat.

THE SLANTING POLE.

The first series of exercises on this machine, UNDER THE POLE, are substantially the same as the corresponding series on the vertical pole, with this difference, that their difficulty is much reduced by its inclined position. The hands still follow the same modes of action as on the vertical machine, but with less difficulty, and the lower limbs bear altogether a less important part in the step, and consequently receive less benefit from it. This machine may for these reasons be made introductory to the vertical one, when, as will sometimes be the case, the simplest exercises on the latter are found too difficult for the beginner.

The second series, ABOVE THE POLE, is also essentially initiatory, but is valuable both in an elementary and practical sense. The exercises comprised in it are safe and interesting, besides giving much light and well distributed movement to both trunk and limbs; as, the reach being made and the lower limbs drawn up, the elongation of the trunk is almost entirely effected by the action of the back and loins.

The exercises in the third series, UNDER THE POLE, are executed entirely by the upper part of the body and the upper limbs, thus corresponding with the second series on the vertical machine, but, as in the series corresponding with the first, they are of a much less arduous nature, owing to the inclined position of the machine.

It will be seen that the first and third series of exercises on this machine entirely correspond with the first and second series on the pole in its vertical position, while every exercise is lessened in difficulty by its inclination; and as this changed position presents another surface, a third and intermediate series is afforded of an entirely different character to either, in which the column of the body is supported on the pole itself. This machine, therefore, is in all respects a valuable companion to the vertical one, with all the corresponding exercises slightly reduced in difficulty for the special practice of less able beginners.

The position of the instructor should be under the pole, because all falls from this machine will be under it; except when the climber is learning the movements of the step in the second series, when the instructor should be in front of the pole behind the climber in order to direct his efforts.

The Slanting Pole should be 3 inches in diameter, and not less than 15 feet or more than 20 feet in length, and laid at an angle of about 45 degrees.

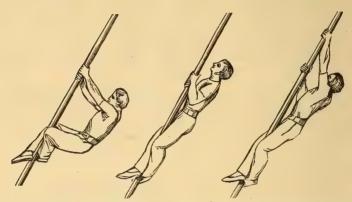
FIRST SERIES.....UNDER THE POLE.
SECOND SERIES....ABOVE THE POLE.
THIRD SERIES....HANDS ONLY.

LEFT HAND LEADING.

FIRST SERIES. Position of attention, under the pole.

Exercise 1. 1. Advance the left hand to the reach and grasp the Course I. pole, the right following; lift the left foot from the ground and place it against the right side of the pole underneath, the knee to the left; lift the right foot and place the heel over the pole, the ankles crossing, the

outside edges of the feet together, the pole between them (Fig. 1), straighten the legs and elongate the trunk, the column of the body at the incline of the Fig. 1. Fig. 2. Fig. 3.



pole, the head slightly held back, the eyes directed to the reach of the hands (Fig. 2)

2. Advance the left hand to the reach (Fig. 3), the right following, draw up the lower limbs without bending the arms, as in Fig. 1, straighten the legs and elongate the trunk to the rest of the hands. Repeat.

In descending, slip the right hand down to the rest, the left following, and lower the body to the reach of the hands. Repeat

This exercise to be repeated with the right hand leading.

HAND OVER HAND.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

COURSE I. 2. Advance the left hand to the reach, as in Fig. 3, draw up the lower limbs, without bending the arm, straighten the knees and elongate the trunk to the rest of the right hand. Repeat, raising the right hand to the reach; the right and left hand alternating throughout.

In descending, slip the leading hand down to the rest, lower the body to the reach of the suppporting hand. Repeat.

BOTH HANDS AT ONCE.

First Series. Position as in first exercise.

Exercise 3. 1. Advance both hands to the reach and grasp the pole; Course II. lift both feet from the ground and clasp the pole in the position of first exercise. The rest of the body in the position of first exercise (Fig. 2).

2. Shoot up both hands to the reach, draw up the lower limbs without bending the arms, and elongate the trunk to the rest of the hands. Repeat.

In descending, slip both hands down to the rest, lower the body to the reach of the hands. Repeat.

WITH ONE HAND.

FIRST SERIES. Position as in first exercise.

Exercise 4. 1. Advance the right hand to the Course III. reach and grasp the pole, spring from the ground and clasp the pole with the feet as in first exercise, bringing the right hand to the half reach, and placing the left hand on the hip joint the fingers to the front, the thumb to the rear, the rest of the body in the position of first exercise (Fig. 4).

2. Tighten the clasp of the feet, raise the right hand to the reach, draw up the lower limbs, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right hand down to the rest, lower the body to the half reach of the hand. Repeat.

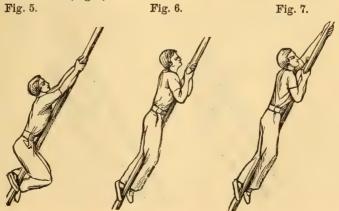
This exercise to be repeated with the left hand.



LEFT HAND LEADING.

SECOND SERIES. Position of attention, facing the pole, the toes touching it.

COURSE I. 1. Stoop forward and grasp the pole with the left hand, the right following immediately under it, slowly extend the trunk of the body along its surface; lift the left foot from the ground and place it against the right side of the pole, the knee on the left; lift the right foot from the ground and place it under the pole, clasping it with the back of the ankle, the trunk of the body in a straight line along its surface, the head slightly held back, the eyes directed to the reach of the hands (Fig. 5), straighten the legs and elongate the trunk (Fig. 6).



2. Advance the left hand to the reach (Fig. 7), the right following, draw up the lower limbs without bending the arms, straighten the knees and elongate the trunk to the rest of the hands. Repeat.

In descending, slip the right hand down to the rest, the left following, lower the body to the reach of the hands. Repeat.

This exercise to be repeated with the right hand leading.

HAND OVER HAND.

SECOND SERIES. Position as in fifth exercise.

Exercise 6. 1. As in fifth exercise.

Exercise 6. 1. As in fifth exercise.

Course I. 2. Advance the left hand to the reach, as in Fig. 7, draw up the lower limbs, without bending the arm, straighten the knees and elongate the trunk to the rest of the right hand. Repeat, raising the right hand to the reach, the right and left hand alternating throughout.

In descending, slip the leading hand down to the rest, lower the body to the reach of the supporting hand. Repeat.

BOTH HANDS AT ONCE.

SECOND SERIES. Position as in fifth exercise.

Exercise 7. 1. As in fifth exercise.

COURSE II. 2. Shoot up both hands to the reach, draw up the lower limbs without bending the arms, straighten the knees and elongate the trunk to the rest of the hands. Repeat.

In descending, slip both hands down to the rest, lower the body to the reach of the hands. Repeat.

LEFT HAND LEADING.

THIRD SERIES.

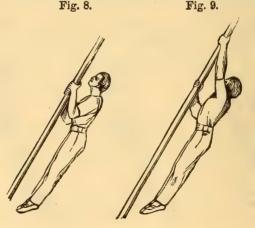
Exercise 8.

COURSE III.

Position of attention, under the pole.

1. Advance the left hand and grasp the pole, the right following; lift both feet from the ground, bringing the

following; lift both feet from the ground, bringing the Fig. 8. Fig. 9.



hands to the half reach, the legs together and straight, the feet together with the toes pointed downwards, the chest advanced, the shoulders square to the front, the neck free, the head slightly held back, the eyes directed to the front, the chin elevated (Fig. 8).

2. Advance the left hand to the reach (Fig. 9), the right following, bend the arms until the hands are at the half reach.

In descending, slip the right hand down to the rest, the left following. Repeat.

This exercise to be repeated with the right hand leading.

HAND OVER HAND.

THIRD SERIES. Position as in eighth exercise.

Exercise 9. 1. As in eighth exercise.

Course III. 2. Advance the left hand to the reach, as in Fig. 9, leaving the right at the half reach; bend the left arm until the hand is at the half reach and raise the right hand to the reach. Repeat.

In descending, slip the leading hand down to the rest, leaving the supporting hand at the reach. Repeat.

BOTH HANDS AT ONCE.

THIRD SERIES. Position as in eighth exercise.

Exercise 10. 1. As in eighth exercise.

Course III. 2. Shoot up both hands the distance of the step, but retaining the arms bent at the half reach. Repeat.

In descending, slip both hands down the distance of the step, retaining the arms bent as in the ascent. Repeat.

THE PAIR OF VERTICAL POLES.

The range of exercises on this machine is not wide, but every one is of a high class; they are all arduous, and are approached through those of the single pole. The learner should never be allowed to attempt them until he is master of the second series on the single pole.

When well executed they are very elegant, and show at a glance the power at the command of the climber, the body being sustained in perfect position between the poles by the hand-grasp alone. For these reasons this machine is always a favorite with able climbers.

The instructor must be careful to give the 'halt' whenever there is any kick or struggle of the lower limbs or trunk, or whenever the full step is not made by the hands, or the elevation of the trunk after the reach is not completed, indicating local or general fatigue, and therefore insecurity of grasp. This applies most especially to the last two exercises, where the feet are removed from the vertical line.

In the fifth exercise the climber must be instructed to be careful to keep the feet between the poles and to guard against their passing to the rear with the

poles clashing in front; in this exercise the knees should be kept well bent, the lifting of the lower limbs should be at the instant of the elevation of the hand, and the alternate action of the right and left sides should be rhythmical, both in the ascent and descent. Another point requiring attention in this exercise is, when the climber nears the top (supposing he is sufficiently advanced to climb the length of the poles), that the 'halt' shall always be given and the climber not allowed to look upwards to ascertain his position; it would be in this act that a loss of equilibrium would most readily occur.

The instructor's place should be right or left of the poles, according as the climber shows a tendency to lose his equilibrium to front or rear, in order that he may be able to interpose his right hand in such a case. In the early practice of the third and last exercises, two instructors, or an instructor and a monitor, should be placed right and left of the machine, on occasions when it is thought desirable to let the climber do his uttermost; but, as above directed, for general practice the 'halt' should be given at the slightest indication of fatigue or failing power, and while he has yet strength to accomplish the descent.

The Pair of Vertical Poles should be $1\frac{1}{2}$ inch in diameter and 18 inches apart, and not less than 12 feet or more than 18 feet high.

FIRST SERIES......Upright.
SECOND SERIES......Hands reversed.
THIRD SERIES......Sitting.

RIGHT HAND LEADING.

Fig. 1. Fig. 2.

FIRST SERIES. Position of attention, between the poles.

COURSE II. 1. Raise the right hand to the reach and grasp the right pole, the left following on the left pole; lift both feet from the ground, bringing the hands to the half reach, the shoulders flat, the chest advanced, the trunk of the body upright and held firm, the neck free, the chin elevated, the eyes directed to the front, the legs straight and together, the feet together, the toes pointed to the ground, the whole column of the body sustained in the line of the poles (Fig. 1).

2. Raise the right hand to the reach (Fig. 2), the left following; elevate the body to the half reach of the hands. Repeat.

In descending, slip the right hand down to the rest, the left following; lower the body to the half reach of the hands. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

FIRST SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

COURSE III. 2. Raise the right hand to the reach and elevate the body to the rest of the left hand; raise the left hand to the reach and elevate the body to the rest of the right hand. Repeat.

In descending, slip the leading hand down to the rest and lower the body to the reach of the supporting hand. Repeat.

BOTH HANDS AT ONCE.

First Series. Position as in first exercise.

Exercise 3. 1. As in first exercise, raising both hands at the same time.

COURSE III. 2. Shoot up both hands to the reach and elevate the body to the rest of the hands. Repeat.

In descending, lower the body until the hands are at the reach; slip both hands down to the rest. Repeat.

RIGHT HAND LEADING.

SECOND SERIES. Position as in first exercise.

Exercise 4. 1. Stoop forward from the waist, bring-COURSE IV. ing the head and shoulders in front of the poles, bend the arms and draw up the hands to the rear until they are nearly as high as the armpits, and grasp the poles, the palms behind the poles, the thumbs to the front; lift both feet from the ground, bending the legs, the feet to the rear, the toes pointed to the rear (Fig. 3).

2. Slip the right hand up and grasp the pole, aiding it by the elevation of the right side and right leg, the left hand following, with the corresponding side and leg. Repeat.

In descending, slip the right hand down and grasp the pole, and at the same time lower the right side and right leg, the left hand following with the corresponding side and leg. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

SECOND SERIES. Position as in first exercise.

Exercise 5. 1. As in fourth exercise.

COURSE IV. 2. Slip the right hand up and grasp the pole, as in fourth exercise; slip the left hand up the distance of the step beyond the right. Repeat.

In descending, slip the right hand down and grasp the pole, as in fourth exercise; slip the left hand down the distance of the step beyond the right. Repeat.



BOTH HANDS AT ONCE.

SECOND SERIES. Position as in first exercise.

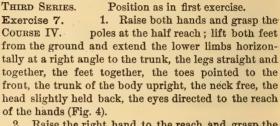
Exercise 6. 1. As in fourth exercise.

COURSE IV. 2. Slip both hands up the distance of the step, and grasp the pole, retaining the arms bent. Repeat.

In descending, slip both hands down the distance of the step, retaining the arms bent. Repeat.

RIGHT HAND LEADING.

Fig. 4.



2. Raise the right hand to the reach and grasp the pole, the left following on the left; elevate the body to the half reach of the hands. Repeat.

In descending, slip the right hand down and grasp the pole, the left following, and lower the body to the half reach of the hands. Repeat.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

Third Series. Position as in first exercise.

Exercise 8. 1. As in seventh exercise.

COURSE IV. 2. Raise the right hand to the reach, and grasp the pole raise the left hand to the reach and grasp the pole beyond the right, retaining the trunk and lower limbs in position. Repeat.

In descending, slip the right hand down and grasp the pole; slip the left hand down and grasp the pole below the right, retaining the trunk and lower limbs in position. Repeat.

BOTH HANDS AT ONCE.

Third Series. Position as in first exercise. Exercise 9. 1. As in seventh exercise.

COURSE IV. 2. Raise both hands to the reach and grasp the poles right and left, at the same time raising the trunk and lower limbs in position. Repeat.

In descending, slip both hands down to the rest and grasp the poles right and left, retaining the body and lower limbs in position. Repeat.

THE PAIR OF SLANTING POLES.

The exercises on this machine bear a great resemblance in character to the second series on the single slanting pole, and all are of an initiatory character. They are excellent for beginners, as giving much movement in a good position, and they yield also good practice for more advanced climbers, when the object is the attainment of speed in the step in both the ascent and descent. A chief point to be observed in them is, that the equipoise of the body shall be sustained by the 'rest' of the limbs, upper and lower; and they are consequently very valuable for the strengthening of these parts.

With beginners the instructor will require to be strict as to position and action, as on the accuracy of these depend the ease and safety of the ascent; these correctly acquired, and the poles fixed securely, there is little or no danger from falls, and none from any other source. Every opportunity should be seized of cultivating these exercises, for the reasons stated above, and also for the reasons advanced for the practice of those on the single slanting and

turning poles.

The position of the instructor should be on the left of the machine, facing it.

The Pair of Slanting Poles should be similar to the single pole and laid at the same angle; they should be 14 inches apart.

SINGLE SERIES.

RIGHT HAND LEADING.

SINGLE SERIES. Position of attention, facing the poles, close to them.

COURSE I. 1. Lean forward, and with the right hand at the half reach grasp the right pole, the left hand following on the left pole; lift the right foot from the ground and place the instep against the inside of the right pole, the knee on the outside, the lower part of the leg crossing the pole diagonally, the left following on the left pole; extend and sustain the trunk between and in the line of the poles, the head held back and the eyes directed to the reach of the hands (Fig. 1).

2. Raise the right hand to the reach, the left following on the left pole, draw up the lower limbs and elongate the trunk to the rest of the hands. Repeat.

In descending, slip the left hand down to the rest, the right following on the right pole, lower the body to the reach of the hands. Repeat.

This exercise to be repeated with the left hand leading.

Fig. 1.



RIGHT SIDE LEADING.



SINGLE SERIES. Position as in first exercise.

Exercise 2. 1. As in first exercise.

COURSE I. 2. Raise the right hand to the reach, and at the same time draw up the right foot (Fig. 2), elongate the trunk, and at the same time raise the left hand and left foot opposite the right hand and right foot. Repeat.

In descending, pass the leading hand down to the rest, extending the corresponding leg, the supporting hand and foot following, at the same time lowering the body. Repeat.

This exercise to be repeated with the left side leading.

RIGHT AND LEFT SIDE.

Single Series. Position as in first exercise.

Exercise 3. 1. As in first exercise.

Course II. 2. Raise the right hand to the reach.

and at the same time draw up the right foot as in preceding exercise, elongate the trunk and raise the left hand and left foot the distance of the step beyond the right hand and right foot. Repeat.

In descending, pass the leading hand to the rest, extending the corresponding leg; lower the body and at the same time pass the supporting hand the distance of the step below the leading hand, and extend the corresponding leg. Repeat.

RIGHT AND LEFT, HAND AND FOOT.



Fig. 3.

Single Series. Position as in first exercise.

Exercise 4. 1. As in first exercise.

COURSE II. 2. Raise the right hand to the reach, and at the same time draw up the left foot (Fig. 3), elengate the trunk and at the same time raise the left hand the distance

of the step above the right, and the right foot the same distance above the left. Repeat.

In descending page the lead

In descending, pass the leading hand down to the rest, extending the opposite leg, lower the body and at the same time pass the supporting hand down below the leading hand and extend the opposite leg. Repeat.

BOTH HANDS AT ONCE.

Single Series. Position as in first exercise.

Exercise 5. 1. As in first exercise.

COURSE III. 2. Shoot up both hands to the reach, draw up the lower limbs, and elongate the trunk to the rest

of the hands. Repeat. In descending, slip both hands down to the rest, and lower the body to the reach of the hands. Repeat. All the foregoing exercises to be repeated with the feet on the outside of the poles, the knees inside.

THE VERTICAL ROPE.

It will be seen by comparing the exercises on the vertical rope with those on its companion machine, the vertical pole, that there is a marked similarity between them.

In descending, slip both hands down to the rest, and lower the body to the reach of the hands. Repeat.

The exercises on both machines divide themselves into two series, which are marked by the same distinctions, viz. that the exercises of the first are executed by the effort of the entire body, and those of the second by the effort of the upper limbs alone.

The first series on the rope is larger than on the pole, because it admits of a greater number of modes of employing the lower limbs; the 'full turn' and the 'stirrup' being peculiar to the rope, and each of these is an admirable mode of climbing in both an elementary and a practical sense. In the latter view, the 'stirrup' is specially valuable, as the rest in this position relieves the upper limbs, and in great measure sets one hand free to execute any purpose for which the ascent may have been made; this exercise can only be performed on a loose rope, and although a comparatively slow manner of ascending, it is generally found to be the easiest to beginners, as it affords a very firm support to the feet; these must only be lifted sufficiently high to bring the hand to the rest when the step is completed.

The second series is in all respects identical with the corresponding one on the [pole, except that it contains no exercises with both hands at once; this being possible only in the first series, where the clasp of the lower limbs holds the rope firm and straight, and thus enables the hands, without quitting the rope, to pass upwards. This series on the rope, however, admits of another exercise, in character almost identical with the seventh on the pair of poles, in which the lower limbs are held straight to the front at a right angle to the body of the climber and the machine.

The first series should be carefully practised before the learner is allowed to begin the second; and the instructor must be careful to give the 'halt' when the slightest symptom of fatigue or irregularity in the step appears. The learner should be instructed to be careful in keeping the column of the body perfectly upright in the line of the rope, and held close in, with the face at the hands, when at the rest; and also in keeping the eyes steadily directed to the reach of the hands, as recommended in the text, and on no account to direct them downwards, or far above the reach, or to allow the head to fall from the perpendicular line of the body. Neglect of these rules does not merely involve the loss of equilibrium, but it distracts and divides the attention of the climber, besides giving an appearance of timidity to his efforts.

In the event of a slip the effort must be, not as with the pole, to slip downward, for the rope passing through the hands of a falling man would cut it to the bone, but to re-grasp the rope. In all the exercises of the second series care must be taken that the climber has no articles of clothing hanging loose or standing prominent about the breast or waist, especially in the descent; as,

after the sense of touch has been deadened by the climb, the hand may grasp these instead of the rope in passing to the rest.

It is also most desirable to accustom the climber to halt more than once during the ascent, and to change from one exercise to another on each recommencement of it. This is useful, not only for elementary but for practical purposes as it enables the climber to continue his ascent far beyond the distance attainable by a single mode of climbing, and also relieves, by a change of action and position, the parts engaged.

The position of the instructor should be the same as with the vertical pole. The Vertical Rope may be of any length from 20 feet to 50 feet; there should be at least three sizes in a gymnasium, of the respective diameter of 1 inch, 1½ inch, 2 inches.

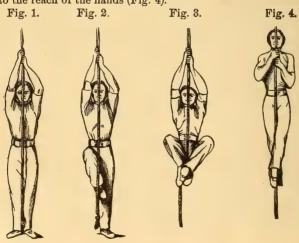
FIRST SERIES.....WITH HANDS AND FEET.
SECOND SERIES....WITH HANDS ONLY.
THIRD SERIES....SITTING.

RIGHT HAND LEADING.

(THE FOOT IN THE HALF TURN.)

FIRST SERIES. Position of attention facing the rope.

Exercise 1. 1. Raise the right hand to the reach and grasp the rope, the left following (Fig 1); lift the right foot from the ground and place it against the left side of the rope, the knee on the right side (Fig. 2); lift the left foot and place it in front of the rope, the ankles crossing, the outside edges of the feet together, the rope between them (Fig. 3); straighten the legs, elongate the trunk; the whole column of the body upright, the chest advanced, the shoulders flat, the elbows in by the sides, the hands at the half reach, the neck free, the head slightly bent back, the chin elevated, the eyes directed to the reach of the hands (Fig. 4).



2. Raise the right hand to the reach and grasp the rope. the left following: draw up the lower limbs, slightly relaxing but without relinquishing the clasp of the feet and without bending the arms as in Fig. 3; tighten the clasp of the feet when elevated, straighten the knees and elongate the trunk to the rest of the hands as in Fig. 4. Repeat.

In descending, slip the left hand down to the rest, and grasp the rope, the right following; lower the body to the reach of the hands, retaining the legs

straight and the rope between the feet. Repeat.

This exercise to be repeated with the left hand leading, the left foot under the rope and the right above it.

RIGHT HAND LEADING.

(THE FOOT IN THE FULL TURN.)

First Series. Position as in first exercise.

Exercise 2. 1. Raise the right foot from the ground, COURSE I. and by a circular movement of the leg over the rope from the outside inwards, pass it round the leg so as to encompass it by a full turn, commencing on the inner side of the thigh and terminating on the inner side of the foot (Fig. 5), the left foot as in first exercise. The rest of the body as in first exercise.

2. Raise the right hand to the reach and grasp the rope, the left following; slacken the clasp of the feet, draw up the lower limbs without bending the arms, tighten the clasp of the feet, straighten the legs and elongate the trunk to the rest of the hands. Repeat.

Descend as in first exercise.

This exercise to be repeated with the left hand leading, the left foot making the full turn.

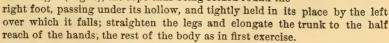
RIGHT HAND LEADING.

(THE FOOT IN THE STIRRUP LOOP.)

FIRST SERIES. Position as in first exercise.

Exercise 3. 1. Lift the right foot from the ground

Course I. Lift the right foot from the ground and place it against the rope, as in first exercise. Lift the left foot from the ground and place it on the right side of the rope, and bringing it up from under the right with the end of the rope over the instep rest the front part of the sole on the front part of the instep of the right (Fig. 6); the rope thus being folded round the



2. Raise the right hand to the reach and grasp the rope, the left following, slacken the clasp of the feet, draw up the lower limbs without bending the arms, replace the left foot on the right, lifting the rope with it as before, straighten the knees and elongate the trunk to the rest of the hands. Repeat.



At the last step, relinquish the loop and place the left foot over the right as in first exercise.

Fig. 7. Descend as in first exercise.

This exercise to be repeated with left hand leading and the left foot in the stirrup loop.

HAND OVER HAND.

First Series. Position as in first exercise.

Exercise 4. 1. As in first exercise.

COURSE II. 2. Raise the right hand to the reach and grasp the rope (Fig. 7), draw up the lower limbs without bending the right arm, straighten the legs, and elongate the trunk to the rest of the right hand. Repeat, raising the left hand to the reach; the right and left hand alternating throughtout.

In descending, slip the leading hand down to the rest and grasp the rope, lower the body to the reach of the supporting hand, the rest of the body as in first exercise. Repeat.

This exercise to be repeated with the feet in the positions of second and third exercises.

HAND OVER HAND.

(A SECOND METHOD.)

FIRST SERIES. Position as in first exercise.

Exercise 5 1. As in first exercise.

COURSE II. 2. Raise the left hand to the half reach above the right, and raise the right to the reach above the left, draw up the lower limbs, straighten the legs, and elongate the trunk. Repeat.

Descend as in fourth exercise.

Fig. 8.

BOTH HANDS AT ONCE.

FIRST SERIES. Position as in first exercise.

Exercise 6. 1. Raise both hands to the reach and grasp Course II. the rope; lift both feet from the ground and clasp the rope in the position of first exercise, bringing the hands to the half reach, as in Fig. 4, the rest of the body as in first exercise.

2. Shoot up both hands to the reach, draw up the lower limbs without bending the arms, straighten the legs and elongate the trunk. Repeat.

In descending, slip both hands down to the rest and grasp the rope, lower the body to the reach of the hands. Repeat.

WITH ONE HAND.

First Series. Position as in first exercise.

Exercise 7.

1. Raise the right hand to the reach and Course IV.

grasp the rope; spring from the ground and

clasp the rope with the feet as in first exercise, bringing the right hand to the half reach; place the left hand on the hip joint, the fingers to the front, the thumb to the rear, the rest of the body in the position of first exercise (Fig. 8).

2. Tighten the clasp of the feet, raise the right hand to the reach, draw up the lower limbs without bending the arm, straighten the knees and elongate the trunk. Repeat.

In descending, slip the right hand down to the rest, lower the body to the half reach of the hand. Repeat.

This exercise to be repeated with the left hand.

RIGHT HAND LEADING.

SECOND SERIES. Position as in first exercise.

Exercise 8. 1. Raise the right hand to the reach course III. and grasp the rope, the left following;

Course III. and grasp the rope, the left following; lift both feet from the ground and pass them to the right side of the rope, the hands at the half reach, the legs together and straight, and slanting to the front, the toes pointed in the same direction, the trunk of the body held firm and upright, the chest advanced, the shoulders flat, the elbows in by the sides, the head slightly bent back, the eyes directed to the reach of the hands (Fig. 9).

2. Raise the right hand to the reach and grasp the rope, the left following; elevate the body to the half reach of the hands. Repeat. At the last step, clasp the rope with the feet, as in first exercise.

Descend as in first exercise.

This exercise to be repeated with the lower limbs on the left side of the rope. These exercises to be repeated with the left hand leading.

HAND OVER HAND.

SECOND SERIES. Position as in first exercise.

Exercise 9. 1. Raise the right hand to the reach and Course III. grasp the rope, the left following; lift both feet from the ground, raising the body until the hands are at the half reach, the legs straight and together, the toes pointed downwards and slightly turned out (the rope lying between them), the column of the body perfectly upright and in the line of the rope, the head erect, the eyes directed to the reach of the hands (Fig. 10).

2. Raise the right hand to the reach, elevating the body to the rest of the left; raise the left hand to the reach, elevating the body to the rest of the right. Repeat. At the last step clasp the rope with the feet, as in fourth exercise.

Descend as in fourth exercise.





Fig. 10.

RIGHT HAND LEADING.

THIRD SERIES. Exercise 10.

Position as in first exercise.

COURSE IV. Fig. 11.

1. Raise the right hand to the reach and grasp the rope, the left following; bend the arms and lift both feet from



the ground and extend the lower limbs horizontally on the right side of the rope, the legs straight and together, the feet together. the toes pointed to the front, the trunk of the body upright, the neck free, the head slightly bent back, the eyes directed to the reach of the hands (Fig. 11).

2. Raise the right hand to the reach and grasp the rope, the left following; elevate the body to the half reach of the hands. Repeat. At the last step, clasp the rope with the feet, as in first exercise.

Descend as in fourth exercise.

This exercise to be repeated with the left hand leading.

HAND OVER HAND.

THIRD SERIES.

Position as in first exercise.

Exercise 11.

1. As in tenth exercise.

2. Raise the right hand to the reach and grasp the rope; Course IV. raise the left hand to the reach and grasp the rope beyond the right, retaining the body and lower limbs in position. Repeat.

Descend as in first or fourth exercise.

THE ROSARY.

The single exercise on this machine is a very valuable one for elementary practice, as it shows at a glance the perfect action of the step on all climbing apparatus; for it is on this only that the perfect rest for the foot, and the adequate fulcrum for the effort in straightening the knee and elongating the trunk, are obtained. When, therefore, it is desirable to show to a beginner the precise movements which go to make the step in climbing, and their sequence, he should be taken to the rosary and have there explained to him that these same consecutive movements compose the step on all climbing machines where both hands and feet are engaged; the firmness of the clasp of the lower limbs supplying the rest presented to the soles of the feet by the beads of the rosary.

As a purely elementary exercise it is valuable also on account of the employment which it gives to the muscles of the back.

In the initiatory instruction care must be taken that the climber preserves the position perfectly, for the tendency of the action of straightening the knee is to push the feet to the front, and with them the lower part of the rosary, thus throwing the weight of the body on the arms.

The position of the instructor should be immediately beneath and behind the climber, with the right hand disengaged, and the left steadying the machine.

The Rosary consists of a vertical rope, on which are strung, at intervals of from 12 to 18 inches, elm beads, turned to the shape of a half ball, 4 inches in diameter, the flat side being upwards. The rope should not be less than 15 feet or more than 20 feet high.

(SINGLE SERIES.)

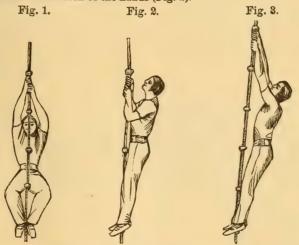
THE SIMPLE CLIMB.

Single Exercise.

Single Exercise.

1. Raise the right hand to the reach and grasp the rope, the left following; lift both feet from the ground and place them on the first bead (Fig. 1), the heels together, the toes pointed to the front, the rope as it were rising from the hollow between the feet and ascending in front of the ankle joint; straighten the knees and elevate the body to the half reach of the hands, the trunk upright, the chest advanced,

the shoulders flat and square to the front, the head slightly held back, the eyes directed to the reach of the hands (Fig. 2).



2. Raise the right hand to the reach, the left following (Fig. 3), lift both feet and place them on the second bead, straighten the knees and elongate the trunk. Repeat.

In descending, pass the left hand down to the rest, the right following; slightly separate the feet, and retaining the lower limbs perfectly straight and the rest of the body in position, lower the feet to the next bead. Repeat.

This exercise may be varied and the difficulty progressively increased by passing one, two, or more beads at each step, giving special care to the hand-grasp during the elongatory movement of the trunk.

TO REST ON THE ROSARY.

- FIRST METHOD. Press the chest and shoulders to the front, thereby bringing the weight almost entirely on the feet.
- SECOND METHOD. Press the breast, cheek, and temple of one side against the rope, at the same instant relieving, by change of posi-

tion, the corresponding hand.

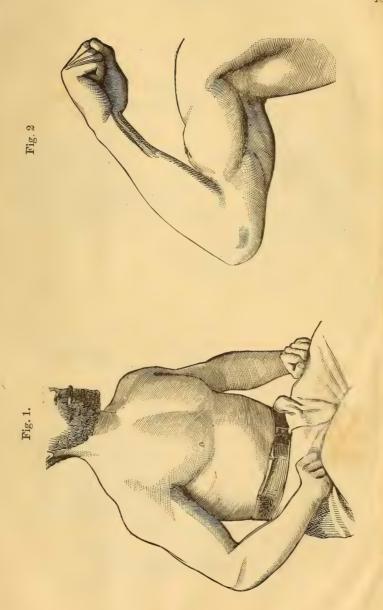
THIRD METHOD. Pass both feet to the front, and sit on the nearest bead.

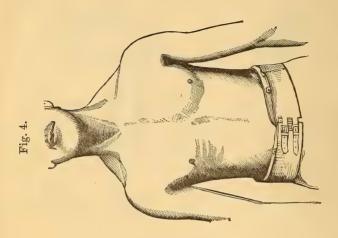
The entire descent may be made in this manner.

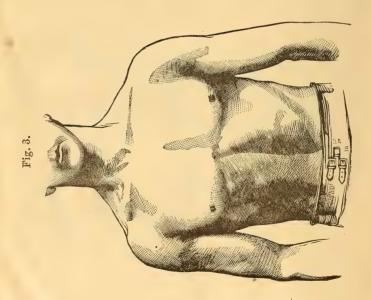
ILLUSTRATIONS OF CERTAIN FORMS OF GROWTH AND DEVELOPMENT, REGULAR AND IRREGULAR, AT DIFFERENT AGES.

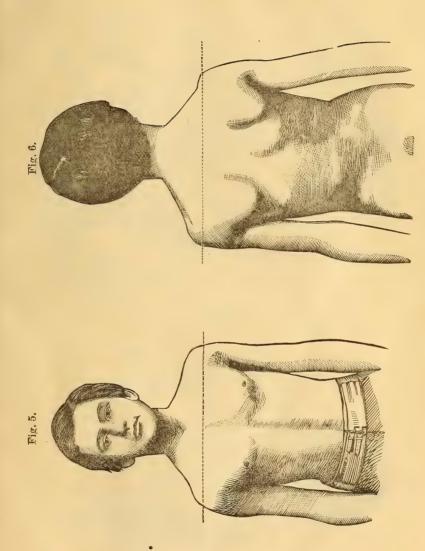
- Fig. 1. Bust and Upper Limbs, showing perfectly regular and complete developments. Age 23.
 - 2. Arm (larger scale), showing very powerful developments. Age 24.
 - " 3. Bust and Upper Limbs, showing regular and uniform developments.

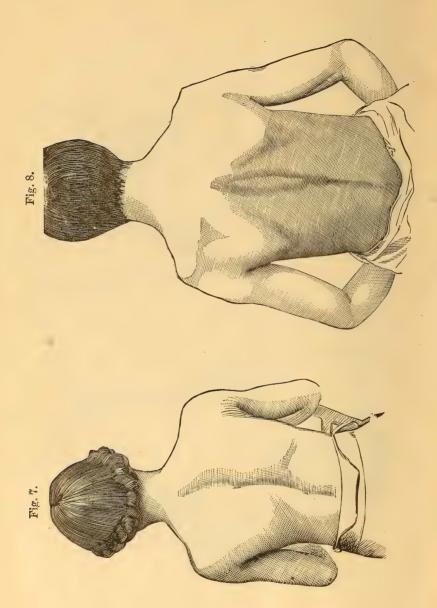
 Age 18.
 - 4. Bust and Upper Limbs, showing regular but imperfect developments. Age 18.
 - " 5. Bust and Upper Limbs, showing irregular growth;—'growing on one side.' Age 10.
 - " 6. Back and Upper Limbs, showing similar irregularity of growth. Age 13.
 - " 7. Back, showing spinal curvature.
 - " 8. Back, showing spinal curvature. Another form.
 - " 9. Bust, showing 'hollow chest.' Age 20.
 - " 10. Bust and Upper Limbs, showing 'drooping shoulders.' Age 20.
 - " 11. Bust showing 'pigeon breast;' side view. Age 10.
 - " 12. Bust (of same individual), showing 'pigeon breast;' front view.
 - " 13. Bust, showing imperfectly developed chest. Age 21.
 - "14. Bust (of same individual), showing nature and extent of expansion of chest after a year's practice of systematized exercise.

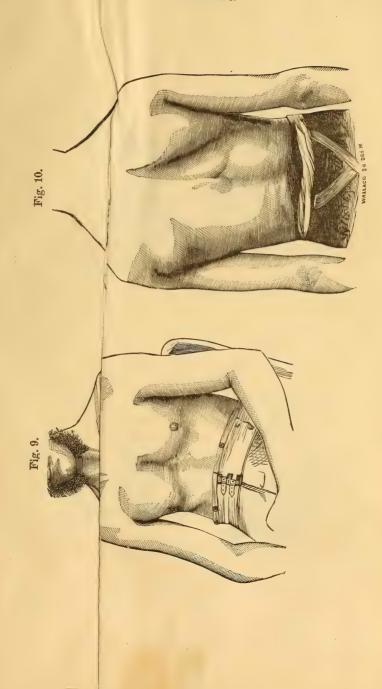


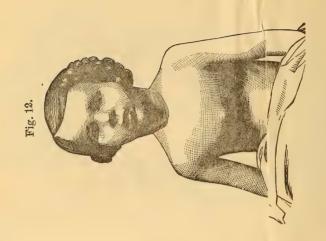




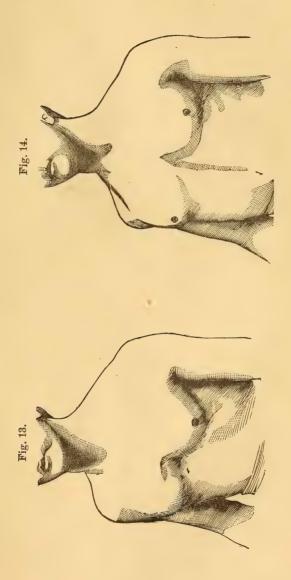






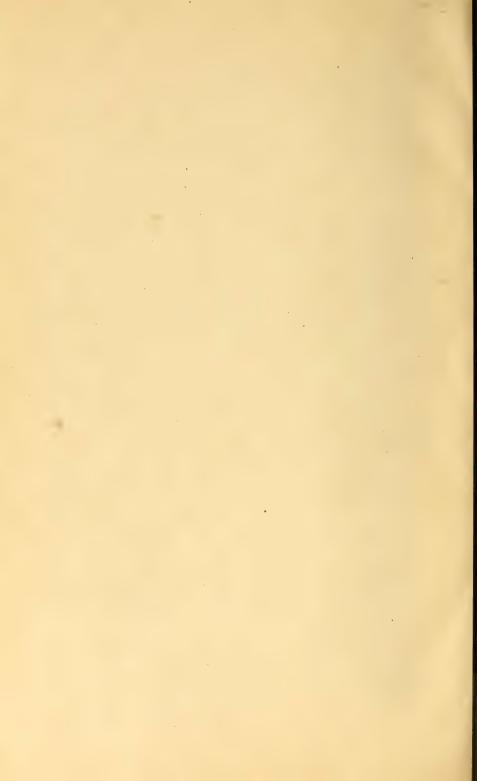


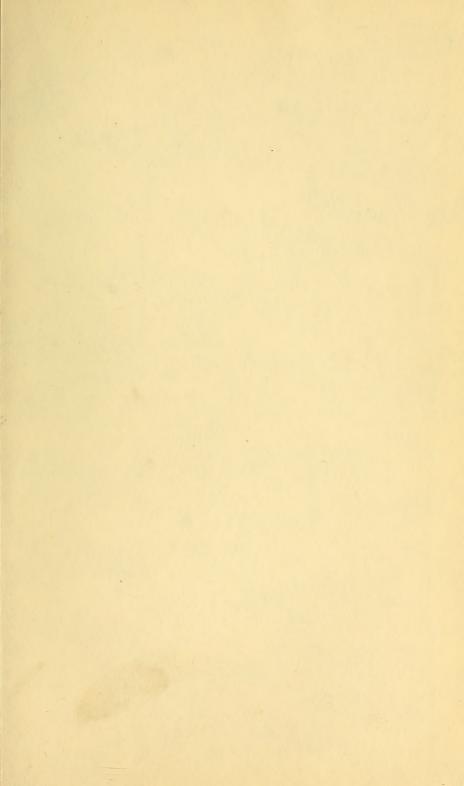




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